



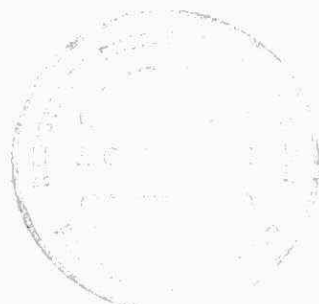
WATER QUALITY AND POLLUTION CONTROL

IN

METROPOLITAN TORONTO

ALONG LAKE ONTARIO

1964 - 65



ONTARIO WATER RESOURCES COMMISSION

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R E P O R T O N

A STUDY OF WATER QUALITY

AND

POLLUTION CONTROL

METROPOLITAN TORONTO

INCLUDING THE MUNICIPALITIES

OF

LONG BRANCH, NEW TORONTO, MIMICO
ETOBICOKE, TORONTO AND SCARBOROUGH

ALONG LAKE ONTARIO

DIVISION OF SANITARY ENGINEERING
ONTARIO WATER RESOURCES COMMISSION

1964-65

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INTRODUCTION

In 1962, a report entitled "Lakefront Survey of Water Quality, Waste Outfalls and Drainage Inlets of Lake Ontario within the area Town of Burlington to Scarborough Township" was prepared by the Ontario Water Resources Commission (OWRC) and distributed to all municipalities concerned.

Follow-up surveys have been made pertaining to each municipality referred to in the report. Subsequently, individual reports covering the areas within the Towns of Burlington, Oakville and Port Credit and the Township of Toronto were published.

This report gives a review of water quality of Lake Ontario and Toronto Harbour along the waterfront of the Municipality of Metropolitan Toronto. Sources of pollution in each of the various Metropolitan Toronto lakefront municipalities are noted and recommendations for the elimination of these sources are presented.

A section has been included in the report dealing with the algae problem in Lake Ontario and Toronto Harbour. A brief explanation of the significance of the various laboratory analyses cited in the report is presented in the Appendix.

The Commission staff gratefully acknowledges the cordial assistance afforded by: Mr. R.L. Clark, Commissioner of Works, and Mr. W. Brown, Works Engineer, Metropolitan Toronto Works Department; Mr. R.M. Bremner, Commissioner of Works, City of Toronto; Dr. A.R.J. Boyd, Medical Officer of Health and Mr. R.A. Colling, Supervisor, Division of Sanitation, Department of Public Health, City of Toronto; Mr. L.J. Ferris, Works Superintendent, Town of Mimico; Mr. H. Harding, Works Superintendent, Town of New Toronto; Mr. K. Elgar, Works Superintendent, Village of Long Branch; Mr. W.M. Swann, Township Engineer, and Mr. C.B. MacRae, Sanitary Drainage Engineer, Township of Etobicoke; Mr. R.K. Brown, Commissioner of Works, and Mr. H. Lightwood, Section Head, Township of Scarborough; Mr. J.H. Jones, Chief Engineer, and Mr. K. Robinson, Chief Surveyor, The Toronto Harbour Commission; and the Metropolitan Toronto and Region Conservation Authority.

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CHAPTER 1

SUMMARY AND RECOMMENDATIONS

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CHAPTER 1

SUMMARY AND RECOMMENDATIONS

1- SUMMARY

This report presents an evaluation of the water quality of Lake Ontario and Toronto Harbour along the waterfront of the following Metropolitan Toronto municipalities: the City of Toronto, the Town of Mimico, the Town of New Toronto, the Village of Long Branch, the Township of Etobicoke and the Township of Scarborough. Various sources of pollution are noted and recommendations are presented for eliminating these sources of pollution.

The data reported includes the results of the analyses of samples collected by the Ontario Water Resources Commission, the Metropolitan Toronto Works Department and the City of Toronto, Department of Public Health.

The water supply for the six municipalities is obtained from the New Toronto, R.C. Harris, Island and Scarborough water purification plants operated by the Metropolitan Toronto Works Department. Each of these plants draws water from Lake Ontario. The new Westerly plant is presently under construction.

Sewage from the six municipalities is treated at the Main, Humber, Highland Creek and Long Branch treatment plants operated by the Metropolitan Toronto Works Department and the Lakeview plant operated by the OWRC. When the Lakeview plant is enlarged, the Long Branch plant will be removed from service.

The general picture for the Metropolitan Toronto area is one of encouragement and illustrates steady progress in the elimination and control of pollution affecting the lake and harbour. The overall plan for water pollution control adopted by Metro required that all sewage be directed into large trunk mains and conveyed to a limited number of major treatment plants located near the lakefront. The total treatment capacity in Metropolitan Toronto is 192 million gpd., an increase of 70% over the capacity 10 years ago.

While recognizing the accomplishments that have been made, a considerable amount of work is still required to keep pace with expansion in the Metropolitan area.

The municipalities included in this report with the exception of the City of Toronto employ separate sewer systems for storm and sanitary waste water. A large portion of the City of Toronto is served by combined sewers. An extensive sewer construction and rehabilitation programme is now in progress to assist in controlling pollution of the lake.

The garbage and refuse from Metropolitan Toronto is disposed of by incineration and at short-term sanitary landfill sites. The problem of disposing of this material, estimated at 1,250,000 tons per year, has become acute and any proposal to establish a sanitary landfill site along the lakefront requires careful consideration.

2- RECOMMENDATIONS

MUNICIPALITY OF METROPOLITAN TORONTO

Adequate trunk sewers should be provided to relieve the high and low level interceptors.

The construction of the proposed cross-town trunk interceptor sewer should be started at the earliest possible date.

The separation of the St. Clair Avenue West meat packing plant wastes from the combined sewerage system, should be completed as soon as possible.

The discharge of all remaining polluted industrial wastes into the lake, harbour and tributary streams should be prevented and arrangements made to have these wastes either treated at the industries or taken into the municipal treatment plants.

CITY OF TORONTO

The city should proceed with the construction of an adequate sewer system for storm water separation to reduce combined overflows into Lake Ontario.

The Department of Public Works should continue the programme of sewer system surveillance to minimize the effects of storm overflows from combined sewers and also eliminate, where possible, overflows or discharges of contaminating wastes from storm sewers during periods of dry weather.

TOWN OF MIMICO

There are no specific recommendations made for the Town of Mimico on the need to correct sources of significant pollution. The town should, however, continue to maintain an active interest in pollution abatement and control.

TOWN OF NEW TORONTO

Discharges from the storm sewers designated as LO-72.7(W) - 9th Street and LO-73.1 (W-1 & W-2) - 2nd Street should be made acceptable for discharge to surface waters.

VILLAGE OF LONG BRANCH

The village should endeavour to locate and eliminate the sources responsible for the contaminated dry weather flows in the following storm sewers: LO-71.1 (W) - 37th Street, LO-71.7 (WR) - 25th Street and LO-71.9 (WR) - 23rd Street.

Samples should be collected regularly during the swimming season in the area of the lake offshore from Marie Curtis Park.

TOWNSHIP OF ETOBICOKE

The accumulations in the ditch extending from the Park Lawn Road storm sewer outlet to the lake should be removed.

Mimico Creek should be closely examined for sources of pollution and corrective action taken where required.

TOWNSHIP OF SCARBOROUGH

The township should continue with an active pollution abatement and control programme. Particular reference is made to eliminating excessive pollution from the sewers designated as: LO-89.3 (W) - Falingbrook Drive, LO-90.4 (R) - Birchmount Road, and LO-91.7 (W) - Scarborough Crescent.

The local watercourses referred to in this report as: LO-92.0 (D) - West of Brimley Road and LO-93.9 (D) - East of Pineridge Road should be examined closely for sources of pollution.

CHAPTER 2
WATER QUALITY INVESTIGATIONS
IN
LAKE ONTARIO AND TORONTO HARBOUR

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CHAPTER 2
WATER QUALITY INVESTIGATIONS
IN
LAKE ONTARIO AND TORONTO HARBOUR

1- INTRODUCTION

This chapter presents an appraisal of water quality in the lake and harbour based on samples obtained by the Ontario Water Resources Commission, the City of Toronto, Department of Public Health, and the Water Supply Division of the Metropolitan Toronto Works Department. Samples collected by the Toronto Health Department and the Commission were analysed at the Commission's Laboratory whereas samples collected by the Metropolitan Toronto Water Supply Division were analysed at the Division's Laboratory.

The water quality information is presented in Tables 1 to 4 at the end of this chapter. The locations of the corresponding sampling points are shown on figures 1, 2 and 3.

Reference is also made to the growths of aquatic plants (algae) which pose a further threat to improving the condition and appearance of the lakefront particularly from a recreation standpoint.

2- LAKE ONTARIO AND TORONTO HARBOUR SURFACE WATERS

Water quality information collected from the lake and harbour by OWRC staff during 1961, 1962, 1963, and 1964 is presented in Table 1. In most instances, the samples were obtained opposite watercourse and sewer outlets and were taken approximately one foot below the surface of the water at points indicated on figures 1, 2, and 3.

The section of the lakefront bordering Metropolitan Toronto demonstrated, with some exceptions, improved conditions considering bacteriological quality.

Samples collected in 1964 from Lake Ontario opposite the mouth of Etobicoke Creek designated as LO-70.7, and opposite the Strachan Avenue storm sewer LO-79.4 revealed bacterial counts in excess of the Commission's objective.

Water quality in the lake at station LO-73.1, opposite the Second Street storm sewer outlets in New Toronto, indicated a high BOD of 64 ppm.

A number of samples taken within the Toronto Harbour in the vicinity of various storm sewer outlets, from the Keating Channel, Ship Channel and Turning Basin, and from Ashbridges Bay indicated bacterial pollution to be rather persistent in these areas.

The samples collected from the Western Channel and Eastern Channel on September 16, 1964, had bacterial counts of 20,000 and 480 per 100 ml, respectively, indicating marked variation in quality at these stations.

Offshore samples are collected weekly from May to September by the City of Toronto Department of Public Health for bacteriological examination. Thirty-five sampling stations as shown on figures 1, 2, and 3 are visited along the lake and harbour in this programme. Table 2 contains a summary of the sample results for 1962, 1963, and 1964 showing minimum, median, and maximum values.

When bacterial densities consistently exceed desirable objectives, the beach area affected is placarded as unsatisfactory for swimming purposes. All the Toronto beach areas with the exception of the Island beaches were closed in the summer of 1959. The eastern beaches have remained open for swimming since that time, but the western beaches have been placarded as unsatisfactory each subsequent year. It is considered that the adverse condition of the water along the western beaches is related to pollution retained within the breakwater by the Niagara current and westerly winds. The storm water discharges from combined sewers undoubtedly contributes heavy pollution to the shore waters.

Forty per cent of the samples collected in 1964 from the western beach areas had bacterial counts in excess of the Commission's objective as compared to 41 per cent in 1963, and 53 per cent in 1962.

The only sampling point that was satisfactory on all of the sampling dates in 1964 was station No. 52. This point is located at the Cherokee Bathing Area 8A opposite the foot of Cherokee Avenue, Centre Island.

3- QUALITY OF METROPOLITAN TORONTO WATER SUPPLY

The samples collected by the Metro Water Supply Division provide valuable bacteriological, ammonia, and phenol information about Lake Ontario. The bacteriological and free ammonia characteristics of the raw water entering the five Metropolitan water works intakes during 1962-1964 are tabulated in Table 3, and the phenol test results are presented in Table 4.

3.1 Bacteriological Tests

The average coliform figures for all plants were 1,054 per 100 ml in 1962, 866 in 1963, and 863 in 1964. The results indicate a slight improvement in the bacteriological quality of the lake water.

3.2 Ammonia Tests

Higher levels of ammonia were indicated in 1964 over those reported in 1963. Although the average ammonia content at the Scarborough plant was high in 1964, the average concentration at the other plants was in the low to moderate range.

3.3 Phenol Tests

Lower levels of phenols were recorded in 1963 and 1964 as compared to those indicated in 1962. However, with the exception of New Toronto and Scarborough purification plants, increases in the phenol concentrations were indicated in 1964 over those reported in 1963.

While a chlorophenolic taste is reported only occasionally at the Scarborough plant, the New Toronto operators detect a chlorophenolic taste in the raw water on several days of practically every month of the year.

4- ALGAE

Excessive growths of algae along certain sections of the Great Lakes create nuisance conditions which affect the use of water for recreational, industrial and municipal purposes. Each summer, aquatic plants contribute to the development of unsightly and odorous conditions adjacent to the shoreline in the area behind the breakwater along the western waterfront of the City of Toronto.

Since the early nineteen-thirties, health agencies have received complaints of decomposing, malodorous accumulations along the shoreline in parts of lakes Ontario and Erie. The black masses of offensive material have been often mistaken for sewage material and many complaints have come from persons concerned with safety of the water for swimming purposes. While there is no health hazard associated with these accumulations, the odours resulting from the decomposition of algae have been known to affect the quality of water supplies. Clogging of intake screens by drifting algae has been experienced in many places and this may restrict the capacity of water supply works.

A bottom of bedrock and cobblestones provides a suitable habitat for a type of filamentous algae, known as *Cladophora*, along most of the lakefront in the Toronto-Hamilton region. During the summer, algae accumulates in varying quantities in almost every place where shoreline improvements do not preclude its deposition.

In March 1964, officials of the Toronto Harbour Commission requested assistance of the Ontario Water Resources Commission in connection with the problem in the Toronto Harbour area.

As a result of the Commission's investigations the following conclusions were reached:

1. While the overall production of *Cladophora* in the Western Protected Waterway appeared quite substantial during the early portion of the summer, the scattered and spotty nature of the growth would render any form of total chemical treatment difficult and uneconomical. A regular programme of inspection and cleaning up the shoreline would seem to provide the best means of forestalling the accumulation and resulting decomposition of the algae.

2. The beds of pondweeds in the area behind the breakwater are aesthetically undesirable, particularly fronting on the Sir Casimir Gzowski Park, the Sunnyside area and the Public Car Park. Application of a herbicide by personnel of the Toronto Harbour Commission would afford the best means of controlling these aquatic plants.

Summary

Cladophora in some specific areas of the Great Lakes constitutes a serious nuisance problem. There is evidence that the areas of growth are becoming more extensive and that the production on existing beds is increasing. Evidence has been presented that nuisance conditions are related to eutrophication and that phosphorus is probably the key element involved. Eutrophication of Great Lake waters is reported to be taking place. Should this trend continue, it may be expected that the problems created by Cladophora will become more widely distributed and more serious in both Canadian and American waters.

The work of the Commission on these studies has of necessity been very general, as virtually no previous studies have been made. It is intended that research in this field will continue. In the immediate future, an attempt will be made to devise a means of measuring the production of Cladophora quantitatively to obtain further information on the effect of fertility levels, light, temperature, season and other environmental factors, and also to permit the measurement of annual variations, differences between specific locations, and changes over an extended period of time.

Looking towards a short-term solution to the problem, laboratory screening of an extensive group of chemicals is planned, and preliminary field tests will be made on any that appear promising. Further extensive testing is contemplated for two chemicals that have been found to be effective in preliminary lake trials. A survey will be undertaken to determine the relative amounts of fertilizing elements, particularly phosphorus, that are contributed by municipalities, industries and land drainage, to the Canadian waters of the Great Lakes.

5- CONCLUSIONS

Although improvements are noted at a number of sampling points, bacterial pollution substantially increases after heavy rainfalls, particularly along the City of Toronto harbour and lakefront. Pollution on these occasions, and to some extent even during dry weather periods, will continue until the sewer separation, expansion and treatment programmes are completed.

A rising trend may be indicated in the ammonia content of the lake supplies and the problems associated with chlorophenolic tastes are prevalent at the western portion of the lake waterfront.

Table 1-1

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Long Branch</u>						
LO 70.6	Lake Ontario - West of mouth of Etobicoke Creek, adjacent to Marie Curtis Park.	Sept. 9/64	1.9	1.0	-	4,400
LO 70.7	Lake Ontario opposite mouth of Etobicoke Creek.	Sept. 9/64	4.8	21.0	10	28,000
LO 70.75	Lake Ontario - near Long Branch Water Pollution Control Plant. sewer outfall.	Sept. 18/61	1.7	-	3	2,300
		Nov. 26/62	-	3.1*	0	82
		May 9/63	-	-	-	23,000
		June 25/63	-	-	-	2
		July 24/63	-	-	-	43
		Aug. 27/63	-	-	-	89
		Sept. 9/64	1.0	2.0	4	98

Table 1-2

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Long Branch (Cont'd.)</u>						
LO 71.9	Lake Ontario- opposite 23rd St. Storm sewer.	Sept. 9/64	1.7	1.0	-	218
<u>Offshore from New Toronto</u>						
LO 72.2	Lake Ontario - opposite mouth of North Creek (Hospital Creek).	Sept. 18/61	48.0	60.0	40	42,000
		Apr. 2/62	13.0	144.0	6	-
		Nov. 26/62	-	3.3*	0	38
		June 25/63	-	-	-	4
		July 24/63	-	-	-	1
		Aug. 27/63	-	-	-	267
		Sept. 9/64	1.9	8.0	-	920
LO 72.65	Lake Ontario opposite Rotary Park.	Sept. 9/64	1.7	8.0	-	30

Table 1-3

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From New Toronto (Cont'd.)</u>						
LO 72.9	Lake Ontario	Nov. 22/61	-	-	4	-
	500 ft. West of	Nov. 26/62	-	4.0*	0	32
	New Toronto water	May 9/63	-	-	-	6,800
	works - 100 ft.	June 11/63	-	-	-	46
	from shore.	July 24/63	-	-	-	45
		Aug. 27/63	-	-	-	37
LO 72.95	Lake Ontario near New Toronto water works intakes.	Sept. 9/64	1.4	1.0	2	38
LO 73.0	Lake Ontario - 500	Nov. 26/62	-	2.3*	0	50
	ft. east of New	June 25/63	-	-	-	0
	Toronto water works	Aug. 27/63	-	-	-	45
	- 100 ft. from shore.					
LO 73.1	Lake Ontario opposite 2nd Street storm sewers and Prince of Wales Park.	Sept. 9/64	64.0	19.0	-	2

Table 1-4

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Mimico</u>						
LO 73.5	Lake Ontario opposite Royal York Road.	Nov. 22/61	-	-	0	-
		Nov. 26/62	-	2.5*	0	82
		June 25/63	-	-	-	10
		July 24/63	-	-	-	2
		Aug. 27/63	-	-	-	33
		Sept. 9/64	2.1	2.0	-	6,000
LO 74.0	Lake Ontario opposite Norris Cres. & West of Mimico Beach.	Nov. 22/61	-	-	0	-
		Nov. 26/62	-	2.5*	0	32
		May 9/63	-	-	-	300
		June 25/63	-	-	-	44
		July 24/63	-	-	-	5
		Aug. 27/63	-	-	-	85
		Sept. 16/64	1.4	2.5*	-	130

Table 1-5

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Mimico (Cont'd.)</u>						
LO 74.2	Lake Ontario opposite Mimico Beach.	Sept. 16/64	1.2	3.3*	-	200
LO 74.3	Lake Ontario opposite Superior Avenue & East of Mimico Beach.	Sept. 18/61	1.7	1.0*	0	166
		Nov. 22/61	2.3	18.0*	0	1,670
		Nov. 26/62	-	2.5*	0	24
		May 9/63	-	-	-	200
		June 25/63	-	-	-	106
		July 24/63	-	-	-	53
		Aug. 27/63	-	-	-	500
		Sept. 16/64	1.4	3.3*	-	210

Table 1-6

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Township of Etobicoke</u>						
LO 75.0	Lake Ontario opposite mouth of Mimico Cr.	Nov. 22/61	-	-	30	-
		Nov. 26/62	-	2.6*	0	62
		May 9/63	-	-	-	270
		June 25/63	-	-	-	34
		July 24/63	-	-	-	7
		Aug. 27/63	-	-	-	1,200
		Sept. 16/64	1.2	3.3*	0	240
LO 75.8	Lake Ontario near Humber Water Pollution Control Plant sewer outfall.	Sept. 16/64	1.4	3.3*	2	490

Table 1-7

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto</u>						
LO 75.9	Lake Ontario opposite mouth of Humber River.	Nov. 26/62	-	3.1*	0	68
		May 9/63	-	-	-	3,800
		June 25/63	-	-	-	92
		July 24/63	-	-	-	13,000
		Aug. 27/63	-	-	-	600
		Sept.16/64	2.3	31.0*	0	590
LO 76.3	Lake Ontario opposite Ellis Ave.storm sewer outlet (inside breakwater adjacent to Sir Casimir Gzowski Park).	Sept.16/64	2.7	6.0*	-	230

Table 1-8

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LO 76.7	Lake Ontario opposite Parkside Drive storm sewer outlet (outside breakwater @ Sunnyside Bathing Pavilion).	Sept. 18/61	1.3	2.0*	0	296
		Oct. 17/61	-	-	0	20
		Nov. 26/62	-	3.6*	0	48
		May 9/63	-	-	-	2,400
		June 25/63	-	-	-	94
		July 24/63	-	-	-	41
		Aug. 27/63	-	-	-	69
		Sept. 16/64	1.3	4.0*	-	320
LO 77.3	Lake Ontario opposite Ronces- valles Ave. storm sewer outlet.	Sept. 18/61	1.3	1.0*	0	194
		Oct. 17/61	-	-	0	176
		Nov. 26/61	-	2.6*	0	1,600
		May 9/63	-	-	-	4,700
		June 25/63	-	-	-	40
		July 24/63	-	-	-	90,000
		Aug. 27/63	-	-	-	8,000
		Sept. 16/64	1.3	2.6*	-	580

Table 1-9

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LO 78.5	Lake Ontario opposite Dufferin St. storm sewer outlet.	Sept.16/64	1.4	2.6*	-	690
LO 79.4	Lake Ontario opposite Strachan Ave. storm sewer outlet.	Sept.18/61	2.4	2.0*	0	20
		Oct. 17/61	-	-	0	276
		Nov. 22/61	2.4	6.5*	0	1,980
		Nov. 26/62	-	2.5*	0	14
		May 9/63	-	-	-	42
		June 25/63	-	-	-	0
		July 24/63	-	-	-	66
		Aug. 27/63	-	-	-	1,200
		Sept.16/64	1.4	3.8*	-	16,000

Table 1-10

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd)</u>						
LO 79.9	Western Channel @ Lake Ontario.	Sept.18/61	1.6	2.0*	0	60
		Oct. 17/61	-	-	0	82
		Nov. 22/61	2.1	5.0*	0	970
		Nov. 26/62	-	3.1*	0	13
		May 9/63	-	-	-	72
		June 25/63	-	-	-	0
		July 24/63	-	-	-	68
		Aug. 27/63	-	-	-	500
		Sept.16/64	1.3	5.0*	-	20,000
LOT 2	Toronto Harbour opposite Garrison Creek storm sewer.	Nov. 26/62	-	3.6*	0	1,200
		June 25/63	-	-	-	1,800
		Aug. 20/63	-	-	-	520,000

Table 1-11

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOT 4	Toronto Harbour	Sept.18/61	3.4	2.0*	0	5,200
	opposite Spadina	Oct. 17/61	-	-	0	20
	Ave. storm sewer	Nov. 22/61	3.0	4.5*	0	1,370
	outlet (foot of	Nov. 26/62	-	3.5*	0	1,300
	North wall of	May 9/63	-	-	-	4,700
	Spadina Ave. slip).	June 25/63	-	-	-	34
		July 24/63	-	-	-	6,700
		Aug. 20/63	-	-	-	400
		Sept.16/64	1.4	2.0*	0	28,000
LOT 5	Toronto Harbour	Sept.18/61	3.8	2.0*	0	138
	opposite Simcoe St.	Oct. 17/61	-	-	4	234
	storm sewer outlet	Nov. 22/61	5.2	4.0*	25	69,000
	(north-west corner	Nov. 22/62	-	3.6*	0	800
	of Pier No. 5 slip,	May 9/63	-	3.6*	-	4,200
	east of Toronto	June 25/63	-	-	-	48
	Harbour Police Stn.	July 24/63	-	-	-	6,600
		Aug. 27/63	-	-	-	200
		Sept.16/64	1.5	5.0*	-	9,000

Table 1-12

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOT 6	Toronto Harbour opposite Yonge St. storm sewer outlet by Pier No. 10.	Sept.18/61	3.2	2.0*	5	4,800
		Oct. 17/61	-	-	0	2,040
		Nov. 22/61	2.9	17.0*	2	130,000
		Nov. 26/62	-	10.5*	0	12,000
		May 9/63	-	-	-	8,000
		June 25/63	-	-	-	66
		July 24/63	-	-	-	6,700
		Aug. 27/63	-	-	-	360
		Sept.16/64	2.0	4.5*	-	15,000
LOT 6A	Toronto Harbour opposite Canada & Dominion Sugar Co. Ltd.outlets.	Sept.16/64	2.4	6.5*	-	8,000

Table 1-13

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOT 7	Toronto Harbour opposite Sherbourne St. storm sewer outlet by Pier No. 15.	Sept. 18/61	3.0	2.0*	2	14,200
		Oct. 17/61	-	-	3	90,000
		Nov. 22/61	3.3	21.0*	4	68,000
		Nov. 26/62	-	11.5*	0	800
		May 9/63	-	-	-	1,700
		June 25/63	-	-	-	200
		July 24/63	-	-	-	27,000
		Aug. 27/63	-	-	-	4,100
		Sept. 16/64	1.9	7.0*	-	17,000
LOT 8A	Toronto Harbour opposite foot of Parliament St. in slip by Pier No. 18, west of Victory Mills.	Sept. 18/61	3.6	3.0*	5	13,000
		Oct. 17/61	-	-	6	21,000
		Nov. 22/61	6.4	14.0*	6	21,000
		Nov. 26/62	r	9.0*	0	21,000
		May 9/63	-	-	-	7,500
		June 25/63	-	-	-	32,000
		July 24/63	-	-	-	80,000
		Aug. 27/63	-	-	-	2,400
		Sept. 16/64	2.2	27.0*	-	20,000

Table 1-14

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOT 8B	Toronto Harbour opposite Victory Mills outlets by Pier No. 18.	Oct. 17/61	8.0	7.0*	6.0	5,300
		Sept.16/64	2.2	29.0*	-	26,000
LOT 10	Toronto Harbour Don River @ (Keating Channel) @ former Cherry St. Bridge.	Nov. 26/62	-	11.5*	-	33,000
		May 9/63	-	-	-	580,000
		June 25/63	-	-	-	172,000
		July 24/63	-	-	-	258,000
		Aug. 27/63	-	-	-	11,500
		Sept.16/64	5.6	34.0*	-	170,000
LOT 13	Toronto Harbour opposite Polson St. storm sewer.	Sept. 16/64	65.0	80.0*	-	2,900
LOT 14	Toronto Harbour Ship Channel @ Cherry St. Bridge.	Oct. 16/61	130.0	196.0	-	14,000
		June 25/63	-	-	-	19,200
		July 24/63	-	-	-	2,900
		Aug. 27/63	-	-	-	2,700
		Sept.16/64	75.0	230.0*	-	11,000

Table 1-15

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOT 17	Toronto Harbour opposite Carlaw Ave. storm sewers @ North-west corner of Turning Basin.	Sept.18/61	150.0	174.0	2,000	12,300
		Oct. 17/61	-	-	350	16
		Nov. 22/61.	82.0	43.0*	5,000	630
		Nov. 26/62	-	41.0	300	56
		May 9/63	-	-	-	770,000
		June 25/63	-	-	-	350,000
		July 24/63	-	-	-	260,000
		Aug. 27/63	-	-	-	930,000
		Sept.16/64	164.0	210.0*	1,000	3,700
LO 84.2	Eastern Channel @ Lake Ontario.	Sept.16/64	1.2	3.3*	-	480
LO 84.6	Lake Ontario opposite Cherry St. Beach.	Sept.16/64	1.1	3.6*	-	720
LO 85.7	Lake Ontario opposite R.L. Hearn Generating Stn. Channel outlet.	Sept.16/64	1.8	13.0*	-	920

Table 1-16

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LO 86.6	Lake Ontario in vicinity of Main Water Pollution Control Plant outfall sewer.	Sept. 18/61	60.0	8.0*	25.0	89,000
		Oct. 17/61	30.0	-	15.0	50
		Nov. 26/62	-	11.5*	1.5	100
		May 9/63	-	-	-	3,000
		June 25/63	-	-	-	220
		July 24/63	-	-	-	12
		Aug. 27/63	-	-	-	32
		Sept.16/64	54.0	100.0*	70.0	1,100,000
LO 86.8	Lake Ontario near mouth of Coatsworth Cut @ entrance to Ashbridges Bay.	Sept.18/61	2.6	60.0*	0.0	45,000
		Oct. 17/61	-	-	0.0	29,000
		Nov. 26/62	-	29.0*	0.0	470
		May 9/63	-	-	-	1,240
		June 25/63	-	-	-	124
		July 24/63	-	-	-	100
		Aug. 27/63	-	-	-	65
		Sept.16/64	2.7	11.0*	-	14,000
LOA 1	Ashbridges Bay opposite ditch outlet @ North-west corner of Bay.	Sept.16/64	9.2	43.0*	-	220,000

Table 1-17

LAKE ONTARIO & TORONTO HARBOUR

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
<u>Offshore From Toronto (Cont'd.)</u>						
LOA 2	Ashbridges Bay opposite Relief & Storm sewer outlets @ North-east corner of Bay.	Sept.16/64	25.0	48.0*	-	1,120,000
LO 87.4	Lake Ontario opposite Woodbine Ave. Storm sewer outlet.	Sept.18/61	2.2	2.0*	0	3,300
		Oct. 17/61	-	-	0	200
		Nov. 26/62	-	21.0*	0	280
		May 9/63	-	-	-	190
		June 25/63	-	-	-	14
		Aug. 27/63	-	-	-	229
		Sept.16/64	1.9	8.5*	-	14,000

Table 1-18

LAKE ONTARIO & TORONTO HARBOUR

Sampling Point No.	Location	Date	5-Day	Suspended	Phenols	MF
			BOD	Solids		Coliform
			(ppm)	(ppm)	(ppb)	Count/100 ml
				(*Turbidity)		** IN
Offshore From Toronto (Cont'd.)						
LO 87.9	Lake Ontario	Sept.18/61	-	-	0	310
	opposite Lee Ave.	Oct. 17/61	-	-	0	20
	Storm sewer outlet	Nov. 26/62	-	11.5*	0	230
	(inside breakwater).	May 9/63	-	-	-	540
		June 25/63	-	-	-	10
		July 24/63	-	-	-	7
		Aug. 27/63	-	-	-	247
		Sept.16/64	1.9	6.0*	-	12,000
LO 88.3	Lake Ontario	Sept.18/61	-	-	0	4,600
	opposite MacLean	Oct. 17/61	-	-	0	70
	Ave. Storm sewer	Nov. 26/62	-	11.5*	0	210
	outlets.	May 9/63	-	-	-	540
		June 25/63	-	-	-	1,500
		July 24/63	-	-	-	11
		Aug. 27/63	-	-	-	31
		Sept.16/64	NOT SAMPLED, DUE TO HIGH WAVES			

TABLE 2

YEARLY SUMMARY OF SAMPLES COLLECTED BY TORONTO HEALTH DEPARTMENT

DESCRIPTION	1962			1963			1964		
	MIN.	MED.	MAX.	MIN.	MED.	MAX.	MIN.	MED.	MAX.
#2 BALMY BEACH - 100 YDS. FROM SHORE	14	215	19,000	0	205	28,000	0	170	14,000
#3 KEW BEACH - 30 YDS. FROM SHORE	8	130	23,000	4	290	53,000	8	600	6,000
#4 WOODBINE BEACH - 50 YDS. FROM SHORE	4	285	47,000	4	111	14,000	0	400	4,700
#7 CHERRY BEACH (AT STA.) - 100 YDS. FROM SHORE	1	1,355	45,000	12	116	24,000	29	360	5,300
#9 WARD'S IS. (BEACH AREA 7) - 100 YDS. FROM SHORE	56	750	41,000	0	370	13,000	1	350	8,000
#51 HANLAN'S PT. BATHING AREA NO. 10 (BATH HOUSE) *	40	70	54,000	0	116	6,100	4	90	3,900
#52 CHEROKEE BATHING AREA 8A (FOOT OF CHEROKEE AVE. CENTRE IS.) *	40	250	55,000	2	100	1,290	0	300	2,300
#53 CENTRE IS. BATHING AREA 8 (BATH HOUSE)	60	240	23,000	0	80	1,260	0	360	3,500
#55-A SUNNYSIDE WEST OF SUPERVISED AREA FOOT OF HOWARD AVE. ***	62	1,400	129,000	36	715	19,000	32	2,400	90,000
#55-B SUNNYSIDE-CENTRE SUPERVISED AREA CENTRE OF FAVILION ***	56	1,350	69,000	56	3,200	13,000	12	6,500	220,000
#55-C SUNNYSIDE-EAST OF SUPERVISED AREA - EAST END OF POOL ***	150	11,000	127,000	30	4,750	11,000	6	8,100	400,000
#56-A WEST FREE AREA (WOMEN'S) FOOT OF DOWLING AVE. ***	90	24,300	189,000	0	1,950	120,000	22	600	43,000
#56-B EAST FREE AREA (MEN'S) FOOT OF DOWLING AVE. ***	50	21,000	50,000	4	1,230	170,000	25	900	29,000
#50 OLYMPIC BATHING AREA 9 (BATH HOUSE) - 100 YDS. FROM SHORE	50	1,000	54,000	6	300	6,300	42	700	5,700
#21½ FOOT OF DUNN AVENUE INSIDE BREAKWATER	110	6,000	52,000	2	900	190,000	2	238	14,000
#21-A FOOT OF DUNN AVENUE OUTSIDE BREAKWATER	80	1,080	85,000	0	55	12,000	0	200	36,000
#22 FOOT OF DUFFERIN ST. INSIDE BREAKWATER	42	1,080	76,000	2	1,630	91,000	8	300	51,000
#22-A FOOT OF DUFFERIN ST. OUTSIDE BREAKWATER	80	770	80,000	2	150	9,800	0	300	15,000
#23 FOOT OF STRACHAN AVE. INSIDE BREAKWATER	160	90,000	880,000	14	4,000	690,000	62	2,700	1,300,000
#23-A FOOT OF STRACHAN AVE. OUTSIDE BREAKWATER	50	4,000	114,000	24	2,700	71,000	4	840	67,000
#150 HUNTER MOUTH - EAST	360	10,000	58,000	470	2,200	70,000	158	3,900	339,000
#151 HUNTER MOUTH - CENTRE	280	8,000	540,000	280	3,445	80,000	280	6,200	500,000
#152 HUNTER MOUTH - WEST	100	6,700	290,000	540	10,000	32,000	16	6,200	630,000
#2-A BALMY BEACH EAST OFFSHORE SILVER BIRCH AVE.	2	350	27,000	0	365	890,000	2	600	13,000
#2-B BALMY BEACH CENTRE OFFSHORE MACLEAN AVE.	90	1,500	58,000	8	515	23,000	16	2,000	10,000
#2-C BALMY BEACH WEST OFFSHORE HAMMERSMITH AVE.	20	980	21,000	0	295	11,000	2	2,100	17,000
#3-A KEW BEACH EAST OFFSHORE LEUTY AVE.	120	985	105,000	46	370	62,000	76	820	140,000
#3-B KEW BEACH CENTRE OFFSHORE WAVERLEY ROAD.	80	1,300	78,000	4	625	26,000	6	500	5,700
#3-C KEW BEACH WEST OFFSHORE KIPPENDAVIE AVE.	140	4,550	76,000	10	780	65,000	24	500	23,000
#4-A WOODBINE BEACH EAST - STATION 1	80	1,370	82,000	14	670	31,000	16	390	17,000
#4-B WOODBINE BEACH CENTRE - STATION 3	20	840	63,000	4	120	16,000	0	190	4,400
#4-C WOODBINE BEACH WEST - STATION 5	6	745	63,000	14	500	27,000	6	500	13,000
#7-A CHERRY BEACH - EASTERLY LIMIT	64	3,100	51,000	18	515	17,000	42	420	5,000
#7-B CHERRY BEACH - CENTRE	30	2,265	30,000	14	238	15,000	40	400	2,900
#7-C CHERRY BEACH - WESTERLY LIMIT	80	2,950	12,000	6	192	19,000	50	350	5,000

* 50 YDS. FROM SHORE

** 100 YDS. FROM SHORE

*** INSIDE BREAKWATER

Table 3-1

YEARLY SUMMARY OF RAW WATER FROM THE METRO INTAKES

SAMPLING BY WATER SUPPLY DIVISION

METROPOLITAN TORONTO DEPARTMENT OF WORKS

<u>INTAKE</u>	<u>1962</u>			<u>1963</u>			<u>1964</u>		
	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>
<u>COLIFORMS (M.F.) PER 100 ML.</u>									
New Toronto Western	18,000	1	741	12,000	0	515	22,000	1	1,007
Island (MP) Western	24,000	0	506	14,000	0	237	4,600	0	141
Island (SS) Eastern	150,000	0	2,415	32,000	0	726	50,000	0	713
R.C. Harris	12,000	0	70	3,800	0	61	2,600	0	121
Scarborough Eastern	41,000	0	1,541	140,000	2	2,794	41,000	4	2,335
<u>NITROGEN AS FREE AMMONIA PPM</u>									
New Toronto Western	0.940	0	0.041	0.450	0	0.039	0.390	0	0.047
Island (MP) Western	0.639	0	0.013	0.600	0	0.016	1.600	0	0.021
Island (SS) Eastern	1.836	0	0.054	2.100	0	0.056	1.900	0	0.081
R.C. Harris	0.310	0	0.006	0.590	0	0.008	0.350	0	0.010
Scarborough Eastern	0.554	0	0.054	1.900	0	0.110	1.200	0	0.128

Frequently, the Mechanical Plant was not in operation when the water was polluted. The Western Intake results, therefore, are representative only of the periods when the plant was in operation.

TABLE - 4

YEARLY SUMMARY OF RAW WATER FROM THE METRO INTAKES

SAMPLING BY WATER SUPPLY DIVISION

METROPOLITAN TORONTO DEPARTMENT OF WORKS

<u>INTAKE</u>		<u>1962</u>				<u>1963</u>				<u>1964</u>			
		<u>No.*</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>No.*</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>No.*</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>
<u>PHENOLS ppb</u>													
New Toronto	Western	189	8	0	1.29	173	3	0	.921	181	4	0	.865
Island (MP)	Western	189	10	0	1.02	173	1	0	.053	181	4	0	.155
Island (SS)	Eastern	189	10	0	1.36	173	2	0	.076	181	6	0	.557
R.C. Harris		189	5	0	1.21	173	3	0	.391	181	3	0	.48
Scarborough	Eastern	189	8	0	1.67	173	3	0	.43	181	4	0	.372

* NO. OF SAMPLES ANALYSED PER YEAR

CHAPTER 3

MUNICIPALITY OF METROPOLITAN TORONTO

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1- WATER SUPPLY

On January 1, 1954, the Metropolitan Corporation assumed responsibility for all municipal waterworks and undertook the production, treatment, storage and distribution of water to the thirteen municipalities. These municipalities in turn distribute the water to domestic and industrial consumers.

The water supply for the City of Toronto is obtained from the R.C. Harris, Island and Scarborough purification plants. The New Toronto plant supplies water to Mimico, New Toronto, Long Branch and Etobicoke. Water is supplied to Scarborough from the R.C. Harris and Scarborough plants.

2- SEWAGE TREATMENT

As in waterworks, the Metropolitan Corporation became responsible on the 1st of January 1954 for all sewage treatment within the Metropolitan area.

Sewage from the member municipalities is treated at the Main, Humber, North Toronto, Highland Creek, Long Branch and Lakeview treatment plants. The first two, which discharge into Lake Ontario, are designed to provide secondary treatment for 140 and 50 mgd, respectively. Flows in excess of the design capacities receive primary treatment only before discharge to the lake. The Long Branch plant has a rated capacity of 0.75 mgd and the present flow reaching the plant averages 0.5 mgd. This plant had received flows in excess of 2.0 mgd before the excess flow was directed to the Lakeview plant. When the Lakeview plant is enlarged, it is planned to remove the plant at Long Branch from service and all sewage from the village will receive treatment at the Lakeview plant.

3- REFUSE DISPOSAL

The garbage and refuse from Metropolitan Toronto is disposed of by incineration and at short-term sanitary landfill sites. Foreseeing a problem with the collection and disposal of municipal and industrial wastes

within the Metropolitan area, the Metropolitan Corporation became concerned and took the initiative in this field. The Metro Department of Works has operated approximately 10 sanitary landfill schemes and new sites are under consideration.

The problem of disposing of vast quantities of refuse, estimated at between 1,250,000 and 1,400,000 tons per year, remains acute. The Metropolitan Works Department is trying to provide a satisfactory solution and various methods of disposal are under active consideration.

A proposal has been made to establish a sanitary landfill along the eastern lakefront. The Ontario Water Resources Commission is concerned that this method of disposal may cause serious pollution of the lake water.

4- TRIBUTARY STREAMS AND TREATMENT PLANT OUTLETS

4.1 Tributary Streams

Table 5 contains the results of the samples collected from the Humber and Don Rivers. The results of the samples collected from North Creek are tabulated in Table 7. The Etobicoke Creek results are presented in Table 8. The sample results relating to Mimico Creek are shown in Table 9, and Table 10 contains the results of the samples taken from Highland Creek.

The following comments deal with the stream sample results.

Humber River at Lake Shore Blvd. W.

The results of the samples collected by the OWRC from the Humber River during 1960-64 are summarized as follows with the 1964 results in brackets:

	<u>M.F. Coliform</u> <u>Count/100 ml</u>	<u>BOD (ppm)</u>
Median	20,100 (5,800)	-- (--)
Average	-- (--)	8.5 (3.0)
Maximum	257,000 (40,000)	32.0 (4.2)
Minimum	490 (490)	2.4 (2.4)
No. of Samples	14 (5)	14.0 (5)

The water quality of the Humber River has shown progressive improvement.

Don River at Lake Shore Blvd. E.

The results of the samples collected by the OWRC from the Don River during 1960-65 are tabulated below with the 1964-65 results in brackets.

	M.F. Coliform Count/100 ml	BOD (ppm)
Median	375,000 (279,000)	-- --
Average	-- --	23.6 (12.4)
Maximum	1,340,000 (540,000)	72.6 (18.0)
Minimum	4,900 (4,900)	2.6 (2.6)
No. of Samples	12 (6)	12.0 (6)

While the results have not reached the desired objectives, there is evidence demonstrating steady recovery in water quality. The samples collected by the Metropolitan Toronto Works Department show a marked improvement of this watercourse and the records reveal a substantial decrease in the bacterial pollution.

North Creek ("Hospital Creek")

The sample results from this creek remain unsatisfactory despite the elimination of wastes from three industries and an overflow from a sewage pumping station which previously entered this creek intermittently from sources located upstream from New Toronto.

Etobicoke Creek at Lake Shore Blvd. W.

A summary of the laboratory results of samples collected from Etobicoke Creek at Lakeshore Blvd. W. during the past four years is tabulated below with the 1964-65 results in brackets.

	M.F. Coliform Count/100 ml	BOD (ppm)
Median.....	16,000 (31,000)	-- --
Average	-- --	9.7 (12.4)
Maximum	1,040,000 (390,000)	56.0 (56.0)
Minimum	<10 (3,800)	1.8 (1.8)
No. of Samples	12 (6)	12.0 (6)

These results show that the water exhibited fluctuating coliform counts and biochemical oxygen demand. The adverse condition of the stream at times may be partly attributed to the discharge of effluents from four water pollution control plants located upstream from the Village of Long Branch. Storm sewer flows and the effluent from a septic tank system serving a neighbouring trailer park may also pollute the creek on occasions. With the removal from service of the Malton International Airport WPCP and the completion of a proposed extension of the Brampton-Chinguacousy WPCP, an improvement in the quality of the water in this stream is anticipated.

Mimico Creek at Lake Shore Blvd. W.

The laboratory results of the samples collected from Mimico Creek at Lake Shore Blvd. W. during the past four years are summarized as follows with the 1964 results in brackets:

	<u>M.F. Coliform</u>		<u>BOD (ppm)</u>	
	<u>Count/100 ml</u>			
Median	7,000	(9,500)	--	--
Average	--	--	9.4	(5.5)
Maximum	41,000	(41,000)	23.0	(10.0)
Minimum	<2	(380)	2.0	(2.0)
No. of Samples	11	(6)	12.0	(6)

A considerable degree of variation occurs in the BOD and coliform counts. In addition to acting as an outlet for a number of storm sewers, Mimico Creek receives the effluent from the Malton water pollution control plant together with some industrial wastes from the Townships of Etobicoke and Toronto.

Highland Creek at Lake Ontario

The results of the samples collected from Highland Creek during 1960-65 are summarized on the following page with the 1964-65 results shown in brackets.

	M.F. Coliform Count/100 ml	BOD (ppm)
Median	555 (555)	-- --
Average	-- --	11.2 (7.6)
Maximum	23,000,000 (73,000)	40.0 (21.0)
Minimum	0 (0)	0.6 (1.2)
No. of Samples	12 (6)	12.0 (6)

These results show wide fluctuation in water quality.

The final effluent from the Highland Creek treatment plant is discharged to the stream immediately upstream from sampling point LO-98.6 (D).

4.2 Treatment Plants

Humber Sewage Treatment Plant

The sample results as shown in Table 5 reveal that when the sewage receives complete treatment, the effluent quality is generally satisfactory.

Main Sewage Treatment Plant

According to the sample results contained in Table 5, the effluent receiving complete treatment was generally satisfactory. The present expansion of this plant should further improve the effluent.

Long Branch Sewage Treatment Plant

The results of the samples presented in Table 8 show an improvement in the quality of the final effluent. However, the BOD and suspended solids concentrations have on occasion failed to meet the Commission's objectives. When the Lakeview plant is enlarged, it is planned to remove the Long Branch plant from service.

5- CONCLUSIONS

While much has been achieved in pollution abatement and sewage treatment since Metropolitan Toronto was formed, many problems remain to be solved. The installation of new trunk sewers and expansion of treatment works will be necessary to keep pace with the present residential, commercial and industrial growths.

Facilities are required for disposal of garbage and refuse, which will approach an estimated annual volume of between 2,000,000 and 2,200,000 tons by 1980.

CHAPTER 4

CITY OF TORONTO

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CITY OF TORONTO

1- INTRODUCTION

The greater portion of Toronto is served with a system of combined sewers. During periods of storm run-off, the storm flows which exceed the capacity of the regulating devices, discharge directly to Lake Ontario via combined sewer overflow outlets. There are approximately eighteen major overflow outlets terminating at the lakeshore and harbour, nine discharging into the Don River and one outlet connected to the Humber River.

The high level and low level interceptor sewers carry the flow from most of the principal combined trunk sewers servicing sub-trunk and street laterals. In certain sections, these interceptor sewers are inadequate for existing dry weather flows. As a result, during periods of dry weather flow, some sewage may escape through the overflow arrangements directly into the lake.

The Ontario Water Resources Commission has held technical discussions with the engineering staffs of both the City of Toronto and the Municipality of Metropolitan Toronto regarding the city's proposed long-term sewer construction programme. In addition to reducing flooding throughout the city, the sewer rehabilitation programme is aimed at pollution abatement.

2- REFUSE DISPOSAL

Refuse from the city is disposed of mainly by incineration.

3- WASTE WATER OUTLETS

Table 5 contains the results of the samples collected from the sewers discharging wastes into the lake and harbour. Figure 4 shows the approximate locations of the sampling points.

The following comments contain information on present conditions, part of which was reported by the Metropolitan Toronto Works Department.

(1) LO-76.3(W) Storm Sewer - Ellis Ave.

The 1964 sample results show a decrease in BOD, suspended solids and bacteria contents. This satisfactory quality effluent may be attributed primarily to corrective action that was taken in connection with the Ellis Avenue and Clendenan Avenue storm sewers in 1964.

(2) LO-76.7(W) - Storm Sewer - Parkside Dr.
(Est.DWF 25-30 gpm)

The results of the samples from this sewer have been unsatisfactory. While the estimated DWF from this sewer was approximately 25 gpm, the flow during a period of storm run-off has been estimated at 5000 gpm. The Metropolitan Works Commissioner has proposed a scheme to separate the industrial waste emanating from the meat packing plants on St. Clair Ave. W. from the existing combined sewerage system, and to divert them to the Humber trunk sewer for treatment at the Humber treatment plant. This diversion will assist in the relief of the Parkside Drive and Roncesvalles Avenue sanitary trunk sewer. It will also help to reduce the load of high strength industrial waste in the high level interceptor sewer which could escape to the lake during periods of heavy storm run-off. Studies by the Metropolitan Toronto Works Department concerning this separation and diversion are well advanced.

(3) LO-77.3 (W)-Storm Sewer
- Roncesvalles Ave.
(Est.DWF 25-30 gpm)

With the exception of the estimated flow during a period of storm run-off, what was said previously, relative to the Parkside Drive sewer, is applicable to this sewer.

(4) LO-78.2 (W) - Cowan Ave.
-(Garrison Cr. Relief)

While the last sample collected by the OWRC in 1962 showed unsatisfactory results, it was reported that at present the DWF is relatively uncontaminated.

(5) LO-78.5(W) Storm Sewer - Dufferin St.

The sample results from this sewer show marked improvement and are now considered satisfactory.

(6) LO-79.4(W) Storm Sewer - Strachan Ave.

Although the previous sample collected in 1962 by the OWRC revealed contamination, it was reported that at present the DWF is relatively uncontaminated. There was no forward movement of wastes in the sewer noted when examined on May 19, 1964.

(7) LOT-1A & 1B (I) Industrial Sewers
- Canada Malting Company Ltd.

The suspended solids content of the waste from these sewers is excessive particularly in view of the volume discharged.

(8) LOT-2 (W) - Garrison Creek Storm Sewer

The previous sample collected from this sewer in 1962 by the OWRC revealed excessive pollution. The dry weather flow upstream from approximately Queen Street has been diverted to the new Cowan Avenue relief storm sewer. A weir permits overflow from the low level interceptor to the Garrison Creek storm sewer during periods of storm run-off. It was reported that some industrial waste contamination may exist in this storm sewer south of Wellington Street.

(9) LOT-3 (W) Bathurst St. Storm Sewer

Although the sample collected from the sewer in 1964 by the OWRC indicated no significant pollution, it was reported that the DWF remains contaminated.

(10) LOT-4 (W) Storm Sewer Spadina Ave.

While there was no apparent forward movement of wastes in this sewer, a sample collected via a manhole revealed excessive BOD, ether solubles and phenol concentrations. It was reported that this sewer is normally free of contaminated dry weather flows.

(11) LOT-5 (W) Storm Sewer - Simcoe St.

The last sample collected in 1962 by the OWRC showed the wastes in this sewer to be heavily contaminated with phenols and bacteria and to have a high BOD. The present condition of the sewer was reported to be satisfactory.

(12) LOT-6 (W) Storm Sewer - Yonge St.

The last sample from this sewer collected in 1962 by the OWRC revealed pollution in excess of permissible limits.

(13) LOT-7 (W) Storm - Sherbourne St.

Although there was no apparent DWF in this sewer upon examination on May 20, 1964, via a manhole on the dock property, the sewer reportedly contains a dry weather flow estimated at 15 gpm. The sample results indicate some polluting wastes in this sewer.

(14) LOT-8 (W) Storm Sewer - Parliament St.

The DWF in this sewer has been estimated at 600 gpm and it represents primarily cooling water from the Liquid Carbonic Canadian Corporation Limited. The chemical analyses reveal some contaminating wastes in this sewer.

(15) LOT-9 (W) - Storm Sewer - Cherry St.
at Keating Channel

The DWF from this sewer shows marked improvement resulting primarily from the elimination of cross connections to this sewer from commercial establishments on Front Street.

The flow from this sewer still contains excessive phenol concentrations and causes discolouration in the receiving stream. Inert material emanating from the Canada Iron Foundries Limited factory is reportedly responsible for the suspended solids and colour in the sewage discharge. This company is planning corrective action.

(16) LOT-11 (W) Storm Sewer - Commissioner St.

There was no apparent forward movement of wastes in this sewer. The 1964 sample results show an improvement.

(17) LOT-12 (I) Industrial Sewer
-Texaco Canada Ltd.
(Est. DWF 35 gpm)

A greyish coloured waste which may emanate from the drum reconditioning unit was discharging from this sewer.

While the sample results show an improvement in most respects, the BOD, suspended solids, ether solubles and phenol concentrations are still excessive.

(18) LOT-13 (W) Storm Sewer - Polson St.

The Continental Can Company of Canada Limited paper board mill on Polson Street discharges part of its processing wastes to this sewer. The wastes show excessive BOD and suspended solids concentrations. The company has installed a series of filters to improve the effluent quality from its other mill located on Commissioner Street. If the filters prove successful, it is planned to install them at the Polson Street mill.

(19) LOT-14 (W) Storm Sewer at Cherry St.
and Ship Channel

A large volume of coloured waste which originates from the Continental Can Company's Polson Street mill was discharging from this sewer. While the 1964 sample results show an improvement in bacterial quality, a deterioration is noted in the chemical analysis.

(20) LOT-17 (W) Storm Sewer - Carlaw Ave.
(West Flow)

The Continental Can Company of Canada Limited paper board mill on Commissioner St. discharges part of its processing wastes to this sewer. The results of the samples from this sewer outlet show that the discharge is high in BOD, solids and phenols. The outlet was partly submerged and therefore the samples may have been diluted. As previously mentioned, the Continental Can Company has installed a series of filters which are expected to improve the effluent quality from the Commissioner Street mill.

(21) LOT-18 (W) Storm Sewer - Carlaw Ave.
(East Flow)

With the exception of the phenol concentrations, the 1964 sample results show an improvement.

This may be partly attributed to the installation of a sanitary sewer on Broadview Avenue to relieve the Queen Street combined sewer and the construction of a weir to divert the Queen Street overflow to the low level interceptor sewer. Although this work has produced improved conditions, additional corrective action is evidently still required. This sewer was partly submerged and there was evidence of a reddish colour discharge prior to sampling.

(22) LOT-19 (W) Storm Sewer - Leslie St.

While there was no flow indicated from this partly submerged outlet at the time of examination on May 21, 1964, the discharge of sanitary sewage from this sewer reportedly occurs at times.

(23) LO-85.7 - Outlet Channel - R.L. Hearn
Generating Station

Although a marked reduction in suspended solids has occurred, the concentrations are still considered to be excessive due to the volume of wastes discharged.

(24) LO-86.8 (D) Ashbridges Bay at Lake Ontario

The coliform count of the sample collected on September 16, 1964, was 14,000 which is in excess of the Commission's permissible limits.

(25) LOA-1 (D) Ditch @ North-West Corner
of Ashbridges Bay

This ditch receives storm water from the Woodfield Road storm sewer and surface run-off from the northern section of the Main WPCP property. No sample was collected from the ditch in 1964 as there was a reverse flow in it at the time of examination on May the 21st. Previous samples obtained during 1960-62 revealed high coliform densities, and the ditch was in a septic condition. An improvement was reportedly noted in the condition of this ditch in 1964.

(26) LOA-3 (W) Storm Sewer - Coxwell Ave.
to NE Corner of Ashbridges Bay
(Est. DWF 10 gpm)

A marked reduction in BOD and bacteria was recorded in the sample collected from this sewer in 1964. This improvement may be attributed to better weir maintenance in 1963 and 1964. The flow in this sewer was blue in colour indicating the entry of industrial waste.

(27) LOA-4 (W) Storm Sewer - Coxwell Ave.
to NE Corner of Ashbridges Bay

This sewer outlet was partly submerged and the sample was collected from a manhole located approximately 500 feet north of Lake Shore Blvd. An improvement is noted in the sample results. However, the coliform count is still indicative of contamination.

4- CONCLUSIONS

In reviewing these results, a reduction in organic and inorganic loadings and/or a decrease in the hydraulic load is noted in some of the flows discharging to the lake and harbour during dry weather periods. Notwithstanding this advancement, a number of sewers continue to discharge dry weather flows which have waste characteristics

in excess of recommended objectives. The overflow from the Parkside Drive sewer has been estimated at 5000 gpm. The total amount of sewage discharging to lake and harbour during periods of storm run-off would be considerable and could only result in adverse conditions. Pollution on these occasions and even during dry weather periods will continue until the programme of Metropolitan Toronto for providing adequate sewers throughout the City and sewage treatment facilities is completed.

An interim report dated December 1964 on sewer systems within certain areas of the city was presented to the Committee of Public Works, by the Commissioner.

The purpose of this report was:

(a) to highlight areas within the city where new building activity and re-development is presently taking place.

(b) to indicate to the Committee areas where service improvements are required to provide for the demands of the new building activity and re-development.

(c) to indicate to the Committee areas where re-development and new building activity may proceed with only modest sewer improvements.

The City of Toronto now has a systematic inspection and maintenance programme of the weirs on the combined sewers which is designed to minimize the effects of storm sewer overflows from combined sewers.

The Industrial Waste Branch of the Metropolitan Toronto Works Department examines the sewer outlets regularly for abnormal flows and collects samples where pollution is suspected. This branch in co-operation with the individual member municipalities also endeavours to establish the source of the pollution and recommends corrective action when required.

The City of Toronto Department of Public Health samples the waterfront regularly during the summer months and advises the public if the beach areas are considered unsatisfactory for swimming purposes. The laboratory results of samples collected by the health department have been reviewed earlier in the report.

Table 5-1

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Ether Solubles</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Flow (mgd)</u>
LO 75.8 T	Outfall sewer -	Nov. 17/60	9.0	30.0	7.6	-	-
	Humber Water	Nov. 21/61	11.0	38.0	7.6	-	-
	Pollution Control	Dec. 14/61	16.0	13.0	7.5	-	-
	Plant (WPCP).	Aug. 29/62	6.0	14.0	-	-	-
(These results represent composite samples collected & analysed by the Metropolitan Toronto Staff).							
	Complete treatment	July/64	9.0	32.0	-	-	37.5
	Primary treatment only.	July/64	77.0	128.0	-	-	0.69
	Complete treatment	Aug./64	5.0	11.0	-	-	36.2
	Primary treatment only.	Aug./64	81.0	107.0	-	-	0.55
	Complete treatment	Sept./64	8.0	16.0	-	-	35.3
	Primary treatment only.	Sept./64	91.0	145.0	-	-	0.05
	Complete treatment	Oct./64	10.0	21.0	-	-	32.7
	Primary treatment only.	Oct./64	127.0	218.0	-	-	0.31

Table 5-2

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 75.9 D	Humber River @ Lake Shore Blvd.	July 26/60	16.0	47*	-	8,200
		Sept. 15/60	18.0	36	2	4,500
		Oct. 20/60	12.0	28	-	170,000
		Jan. 18/61	32.0	44	-	257,000
		Sept. 27/61	6.0	18*	-	212,000
		Nov. 15/61	8.0	48*	14	2,260
		June 27/62	3.6	26*	-	52,000
		Aug. 29/62	2.8	81*	4	100,000
		May 9/63	4.8	36*	4	32,000
		July 9/64	4.2	-	-	6,700
		Aug. 31/64	2.5	56	-	40,000
		Sept. 24/64	2.4	12	-	5,300
		Oct. 28/64	2.6	-	-	5,800
		Nov. 23/64	3.5	-	-	490
LO 75.9 W	30 in. ϕ storm sewer - Lake Shore Blvd.	NO FORWARD MOVEMENT - NOT SAMPLED				
LO 76.3 W	52 in. ϕ storm sewer - Ellis Ave.	Nov. 15/60	75.0	408.0	10	95,000
		Nov. 15/61	1.6	10.5*	10	70
		Aug. 20/62	8.0	42.0	4	28,000
		May 19/64	5.2	12.0	20	220

Table 5-3
OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 76.7 W	9 ft. ϕ storm sewer - Parkside Dr.	Nov. 15/60	170.0	346	28	3,300,000
		Nov. 28/61	44.0	62	18	5,100
		Sept. 18/62	128.0	52	50	300,000,000
LO 77.3 W	7 ft.-6 in. x 7 ft. - 6 in. storm sewer-Roncesvalles Ave.	Nov. 15/60	130.0	722	45	2,500,000
		Nov. 22/61	114.0	68	0	1,700
		Aug. 20/62	31.0	30	25	1,460,000
LO 77.9 W	11 ft. ϕ storm sewer - Jameson Ave.	Nov. 15/61	NOT SAMPLED			
LO 78.2 W	9 ft. ϕ storm sewer - Cowan Ave. (Garrison Cr. Relief).	Nov. 15/61 Sept. 18/62	NOT SAMPLED, 56.0	OUTFALL EXTENSION UNDER CONSTRUCTION		
				134	12	990,000
LO 78.5 W	6 ft.-6 in. x 6 ft. - 6 in. storm sewer Dufferin St.	Nov. 15/60	15.0	30	4	153,000
		Nov. 15/61	205.0	62*	30	1,950,000
		Nov. 28/61	205.0	248	18	250
		Aug. 21/62	7.2	58	7	500,000
		May 19/64	1.2	11	-	18,000

Table 5-4

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 78.9 W	Storm sewer - 525 ft. East of Aberdeen Rd.	Nov. 15/61	NOT LOCATED			
		Aug. 21/62	24.0	54	5	43,000,000
		May 19/64	NOT SAMPLED, NO FORWARD MOVEMENT NOTED			
LO 79.4 W	12 ft. x 12 ft. storm sewer - Strachan Ave.	Nov. 15/61	NOT SAMPLED DUE TO CONSTRUCTION & TEMPORARY BY-PASSING TO STORM SEWER			
		Aug. 21/62	135.0	190	20	5,500
		May 19/64	NOT SAMPLED, NO FORWARD MOVEMENT NOTED			
LO 79.7 W	24 in. ϕ storm sewer - Stadium Rd.	Nov. 15/61	NOT SAMPLED, OUTFALL SUBMERGED			
		May 19/64	NOT SAMPLED, NO FORWARD MOVEMENT NOTED			
LOT 1 I	Sewer outlet - East of Canada Malting Co. Ltd.	Nov. 15/61	NOT LOCATED			
		May 19/64	NO FLOW NOTED			
LOT 1A I	12 in. ϕ Industrial sewer - Canada Malting Co. Ltd. (West outlet)	Aug. 20/62	1.8	10	-	-
		May 19/64	2.6	24	-	7,000

Table 5-5

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LOT 1B I	12 in. ϕ Industrial sewer Canada Malting Co. Ltd. (East outlet)	Aug. 20/62	2.4	10	-	-
		May 19/64	2.0	21	-	11,000
LOT 2 W	6 ft. x 9 ft. Garrison Creek Storm sewer.	Oct. 13/60	80.0	52	25	1,000,000
		Nov. 28/61	NOT SAMPLED, CAR PARKED OVER MANHOLE			
		Aug. 20/62	330.0	562	30	174,000,000
		May 19/64	NOT SAMPLED, SAMPLING POINT INACCESSIBLE WITH PRESENT FACILITIES.			
LOT 3 W	6 ft. x 9 ft. Bathurst St. Storm sewer.	Nov. 28/61	76.0	162	18	600
		Aug. 20/62	185.0	124	25	1,440,000
		May 19/64	12.0	4	-	0

Table 5-6

OUTLET SURVEY RESULTS - CITY OF TORONTO

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN	Est. DWF (gpm)
LOT 4 W	6 ft. x 8 ft. storm sewer - Spadina Ave.	Nov. 28/61	SUITABLE SAMPLING POINT NOT LOCATED				
		Aug. 21/62	4400.0	5316	6,000	-	-
		May 20/64	120.0	-	10,000	-	-
			Ether Solubles				
LOT 5 W	8 ft. 2 in. x 5 ft. 5 in. Storm sewer - Simcoe St.	Nov. 28/61	-				
		Aug. 21/62	-				
		May 20/64	44,200				
		Oct. 13/60	65.0	18	3,000	131,000	-
LOT 6 W	6 ft. 6 in. Storm sewer - Yonge Street.	Nov. 28/61	58.0	78	16	-	-
		Sept. 18/62	52.0	23	1,750	170,000,000	-
		Oct. 13/60	14.0	16	10	189,000	-
		Nov. 28/61	NOT SAMPLED, NO FORWARD MOVEMENT NOTED				
LOT 7 W	10 ft. x 10 ft. Storm sewer Sherbourne St.	Aug. 21/62	NOT SAMPLED, NO FORWARD MOVEMENT NOTED				
		Sept. 18/62	27.0	51	15	56,000,000	
		Oct. 13/60	90.0	18	60	100,000**	
		Nov. 28/61	136.0	82	18	600	
		Aug. 22/62	11.0	30	20	2,330,000	
		May 20/64	55.0	20	4	270,000	15

Table 5-7

OUTLET SURVEY RESULTS - CITY OF TORONTO

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN	Est. DWF (gpm)
LOT 8 W	7 ft. x 6 ft. Storm sewer - Parliament St.	Oct. 13/60	295.0	84.0	-	3,800,000	
		Nov. 16/61	98.0	13.5*	-	181,000	
		Aug. 21/62	15.0	34.0	-	193,000	
		May 20/64	110.0	36.0	0	0	600
LOT 9 W	4 ft. 6 in. x 4 ft. 6 in. - Storm sewer - Cherry St.	Sept. 19/60	120.0	138.0	60	41,000,000	
		Oct. 13/60	200.0	192.0	35	1,300,000	
		Nov. 28/61	310.0	654.0	20	6,000	
		Aug. 22/62	10.0	32.0	40	670,000	
		May 20/64	11.0	25.0	200	44	
LOT 10 D	Don River @ Lake Shore Blvd. Bridge.	Feb. 16/60	72.0	80.0	-	840,000	
		Aug. 16/60	14.0	27.0*	-	1,340,000	
		Feb. 10/61	76.0	160.0	-	990,000	
		Oct. 18/61	23.0	16.0*	-	138,000	
		June 19/62	12.0	31.0*	-	1,090,000	
		May 22/63	12.0	18.0*	-	103,000	
		Apr. 20/64	14.0	52.0	-	103,000	
		June 22/64	2.6	32.0*	10	4,900	
		Aug. 10/64	7.2	12.5*	-	380,000	
		Sept. 25/64	12.0	12.5*	4	540,000	
		Dec. 3/64	18.0	21.0*	-	229,000	
		Jan. 21/65	21.0	12.0*	-	370,000	

Table 5-8

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LOT 11 W	3 ft. x 3 ft. Storm sewer - Commissioners St.	Nov. 21/61	35	88	15	36,000	-
		Aug. 22/62	21	92	30	540,000	-
		May 30/64	11	27	20	2,700	-
			<u>Ether Solubles</u>				
		Nov. 21/61	-				
		Aug. 22/62	-				
		May 30/64	11				
LOT 12 I	18 in. ϕ Industrial sewer - Texaco Canada Ltd. - to slip North of Polson St.	Nov. 16/61	60	26*	28	1,290	-
		Aug. 22/62	47	290	35	2,000	-
		May 20/64	26	46	130	0	35
			<u>Ether Solubles</u>				
		Nov. 16/61	-				
		Aug. 22/62	-				
		May 20/64	38				

Table 5-9

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LOT 13 W	24 in. ϕ storm sewer - Polson St.	Nov. 21/61	165	250	13	200
		(OUTLET SUBMERGED, SAMPLE DILUTED WITH LAKE WATER)				
		Aug. 22/62	205	380	125	52,000
		May 20/64	114	280	30	366
LOT 14 W	24 in. ϕ Storm sewer - Cherry St. to North Side of ship channel.	Nov. 21/61	130	180	20	400
		Aug. 21/62	185	288	12	270,000
		May 20/64	245	506	45	0
LOT 15 I	Industrial sewer - Texaco Canada Ltd.	Nov. 21/61	NOT LOCATED			
		Aug. 22/62	NO FLOW NOTED TO SHIP CHANNEL			
		May 20/64	NO FLOW NOTED TO SHIP CHANNEL, NOT SAMPLED			
LOT 16 W	30 in. ϕ storm sewer - Basin St.	Nov. 21/61	FLOW INSUFFICIENT FOR SAMPLING			
		Aug. 29/62	NO FORWARD MOVEMENT NOTED			
		May 21/64	NO FORWARD MOVEMENT NOTED, NOT SAMPLED			

Table 5-10

OUTLET SURVEY RESULTS - CITY OF TORONTO

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN
LOT 17 W	6 ft. x 8 ft.	Sept. 15/60	225	438	3,000	10,000 **
	- 6 in. Storm	Oct. 30/60	100	148	40	800,000
	sewer - Carlaw	Nov. 28/61	270	202	90	4
	Ave. (west flow)	Aug. 29/62	380	4806	3,500	96,000
		May 21/64	340	330	15,000	41,000
LOT 18 W	6 ft. x 8 ft.	Oct. 13/60	75	66	30	700,000
	6 in. - Storm	Nov. 28/61	NO FLOW NOTED			
	sewer - Carlaw Ave.	Aug. 29/62	355	140	3,000	7,700,000
	(east flow)	May 21/64	150	96	6,000	131,000
LOT 19 W	8 ft. 6 in. x	Sept. 15/60	155	76	4,000	1,000,000 **
	8 ft. 3 in. -	Oct. 13/60	120	34	25	180,000
	Storm sewer -	Nov. 28/61	NOT SAMPLED, MANHOLE COVERED WITH EARTH			
	Leslie St.	Sept. 18/62	76	66	8	80,000
		May 21/64	NOT SAMPLED, OUTLET PARTLY SUBMERGED, NO FLOW INDICATED			
			Ether Solubles			
		Sept. 15/60	13			
		Oct. 13/60	-			
		Nov. 28/62	-			
		Sept. 18/62	-			
		May 21/64	-			

Table 5-11
OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LOT 20 W	8 ft. 6 in. x 8 ft. 3 in. Storm sewer - Leslie St.	Nov. 28/61 May 20/64	NOT SAMPLED, NOT SAMPLED,	MANHOLE COVERED WITH EARTH OUTLET PARTLY SUBMERGED NO FLOW INDICATED		
LOT 21 W	18 in. ϕ Storm sewer - Cherry St. to South Side of ship channel.	Nov. 21/61	NOT LOCATED			
LO 84.2 D	Eastern Channel of Lake Ontario.	Nov. 21/61 Sept. 16/64	NOT SAMPLED 1.2	3.3*	-	480
LO 85.7 I	Outlet Channel R.L. Hearn Generating Stn.	Aug. 29/62 Jan. 14/64 May 21/64	2.8 - 3.2	68.0 109.0 19.0	0 10 10	11,000 - 910
LO 86.6 T	Outfall sewer - Main Water Pollution Control Plant. (WPCP)	Sept. 19/60 Nov. 17/60 Nov. 21/61 Aug. 29/62	275.0 275.0 320.0 8.0	94.0 182.0 278.0 22.0	18 - 100 12	4,000,000 19,000,000 930,000 390,000

Table 5-12

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Flow (mgd)</u>
LO 86.6 T	Outfall sewer - Main Water Pollution Control Plant (WPCP).					
***	Complete treatment	July/64	8.0	16.0	-	101.1
***	Primary treatment only	July/64	73.0	136.0	-	43.4
***	Complete treatment	Aug./64	9.0	14.0	-	105.0
***	Primary treatment only	Aug./64	88.0	189.0	-	34.3
***	Complete treatment	Sept./64	7.0	9.0	-	101.0
***	Primary treatment only	Sept./64	124.0	202.0	-	29.0
***	Complete treatment	Oct./64	12.0	17.0	-	95.9
***	Primary treatment only	Oct./64	127.0	296.0	-	27.5
***	THESE RESULTS REPRESENT SAMPLES COLLECTED AND ANALYSED BY THE METROPOLITAN TORONTO STAFF.					

Table 5-13

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 86.8 D	Ashbridges Bay @ Lake Ontario.	Nov. 21/61 Sept. 16/64	NOT SAMPLED 2.7	11.0*	-	14,000
LOA 1 D	Ditch to North- West corner of Ashbridges Bay.	Oct. 13/60 Nov. 22/61 Aug. 29/62 Sept. 18/62 May 21/64	80.0 50.0 6.4 28.0 NOT SAMPLED, REVERSE FLOW NOTED IN DITCH	12.0 214.0 24.0 38.0	80 16 4 0	>10,000,000 ** 630,000 48,000 110,000,000
LOA 2 R	42 in. ϕ Relief sewer to North- East corner of Ashbridges Bay.	Nov. 21/61 May 21/64	NO FLOW NOTED NOT SAMPLED, OUTLET PARTLY SUBMERGED			
LOA 3 W	9 ft. x 7 ft. - 3 in. storm sewer- Coxwell Ave. to North East corner of Ashbridges Bay.	Nov. 17/60 Nov. 21/61 Sept. 12/62 May 21/64	66.0 90.0 116.0 10.0	92.0 60.0 66.0 144.0	2 12 30 0	2,200,000 1,530,000 1,440,000 870

Table 5-14

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LOA 4	9 ft. x 7 ft. -	Nov. 21/61	NO FLOW NOTED			
W	3 in. Storm sewer-	Sept.12/62	18.0	74.0	8	1,490,000
	Coxwell Ave. to	May 21/64	1.0	9.0	10	141,000
	North-East corner					
	Ashbridges Bay.					
LO 87.4	2 ft. x 3 ft.	Nov. 22/61	NO FLOW NOTED			
W	Storm sewer -	May 21/64	NOT SAMPLED, OUTLET PARTLY SUBMERGED,			
	Woodbine Ave.		NO APPARENT FLOW			
LO 87.5	3 ft. 6 in. x	Nov. 22/61	NO FORWARD MOVEMENT - NOT SAMPLED			
W	3 ft. 3 in. Storm	May 21/65	NOT SAMPLED, OUTLET PARTLY SUBMERGED,			
	sewer-Kippendavie		NO APPARENT FLOW			
	Ave.					
LO 87.6	3 ft. 3 in. x	Nov. 22/61	NO FORWARD MOVEMENT, NOT SAMPLED			
W	3 ft. - Storm	Sept.12/62	66.0	53.0	0	2,430,000
	sewer - Kenilworth	May 21/65	NOT SAMPLED, OUTLET PARTLY SUBMERGED,			
	Ave.		NO APPARENT FLOW			

Table 5-15

OUTLET SURVEY RESULTS - CITY OF TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 87.9 W	3 ft. 6 in. x	Nov. 22/61	5.2	3.5*	0	14,000
	3 ft. Storm	Sept.12/62	16.0	1.8*	60	11,800
	sewer - Lee Ave.	May 21/65	NOT SAMPLED, OUTLET PARTLY SUBMERGED, NO APPARENT FLOW			
LO 88.3 W	6 ft. 6 in. x	Sept.14/60	2.4	20.0	2	0
	3 ft. Storm sewer -	Nov. 22/61	NO FLOW NOTED			
	Maclean Ave.	May 21/64	NOT SAMPLED, OUTLET PARTLY SUBMERGED, LIGHT FLOW			
LO 88.3 W-1	6 ft. 6 in. x	Sept.14/60	2.0	42.0	2	<10
	3 ft. Storm sewer -	Nov.22/61	NO FLOW NOTED			
	Maclean Ave.	Sept.12/62	1.3	2.6*	0	6,000
		May 21/64	NOT SAMPLED, OUTLET PARTLY SUBMERGED, LIGHT FLOW			
LO 88.8 W	3 ft. x 2 ft.	Sept.14/60	4.0	8.0	2	0
	6 in. Storm sewer -	Nov. 22/61	NOT SAMPLED			
	Nursewood Road.	Sept.12/62	8.0	736.0	20	3,000
		May 21/64	NOT SAMPLED, OUTFALL PARTLY SUBMERGED, FLOW RELATIVELY CLEAR			

CHAPTER 5

TOWN OF MIMICO

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TOWN OF MIMICO

1- INTRODUCTION

The Town of Mimico with a 1964 assessed population of 18,584 is bounded on the west by New Toronto and on the north and east by the Township of Etobicoke. It is bordered on the south by approximately 1.5 miles of the Lake Ontario shoreline. A public beach is maintained by the town opposite the foot of Mimico Avenue. The shorewaters adjacent to the park are used for swimming purposes.

Mimico has a separate system of sewers. The storm sewers are tributary to Lake Ontario with the exception of a storm sewer serving the north-east section of the town which drains into Mimico Creek. Sanitary sewage is treated at the Humber water pollution control plant.

Refuse is burned at an incinerator located in Mimico and shared with the neighbouring municipality of New Toronto.

Reclamation of land from Lake Ontario by filling has been a common practice in Mimico particularly at the rear of the new apartment buildings. Complaints concerning alleged impairment of the lake water quality resulting from the filling operations were investigated by the Commission on different occasions in 1959, 1961 and 1962. Concern was expressed at the lack of proper retaining walls to prevent back-washing of the fill into the lake. One investigation revealed that floating debris from a filled area was reaching both private beach areas and the public beach previously mentioned. The OWRC recommended that adequate measures be taken to retain the fill by using interlocking steel piles or other suitable retaining structures. To date, adequate measures have not been taken as recommended.

The use by private interests of the lakefront property bordering Mimico including the land under water for erecting buildings or for filling operations is now under the control of a by-law, which was passed in July, 1962. A retaining wall or other structure, sufficient to prevent the fill from being washed away or eroded by the action of the water is now required in order to comply with this by-law.

2- WASTE WATER OUTLETS

Table 6 contains the analytical results of the samples collected from the storm sewer outfalls in Mimico. The approximate locations of the outlets and sampling points are presented in figure 5.

- (1) LO-74.3 (WR) Storm & Relief Sewer
- Superior Ave. (Est. DWF 0.5 gpm)

The Superior Avenue storm sewer was the only one with any dry weather flow on September 30, 1964 and the flow was less than 1.0 gpm. A sewage pumping station located on Superior Ave. is provided with an overflow arrangement which is connected to this sewer. The pumping station receives sanitary sewage from Mimico and an eastern portion of New Toronto including the processing wastes from the Campbell Soup Company Limited plant.

While the phenol concentration in the dry weather flow was excessive on one occasion, the discharge appeared otherwise satisfactory from a chemical standpoint. The bacteria counts, although not indicative of detrimental sewage pollution, suggest the presence of mild contamination in the discharge.

3- CONCLUSIONS

The results indicate that the Town of Mimico is not causing any significant pollution of Lake Ontario from the storm sewer system.

Table 6-1

OUTLET SURVEY RESULTS - MIMICO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 73.5 W	2 - 30 in. ϕ storm sewers - Royal York Rd.	Sept.15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Sept.30/64	NO FLOW NOTED			
LO 73.9 W	24 in. ϕ storm sewer - Edith Ave.	Nov. 29/61	NO FLOW NOTED			
		Sept.30/64	NO FLOW NOTED			
LO 73.9 W-1	Storm sewer- Miles Rd.	Sept.15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Sept.30/64	NO FLOW NOTED - OUTFALL OBSTRUCTED			
LO 74.0 W	18 in. ϕ storm sewer - Norris Cres.	Sept.15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov.29/61	NO FLOW NOTED			
		Sept.30/64	NO FLOW NOTED			

Table 6-2

OUTLET SURVEY RESULTS - MIMICO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 74.3 WR	Storm sewer - Superior Ave.	Nov. 22/61	4.2	8.5*	17.0	62,000	-
		Aug. 27/62	5.6	4.0	10.0	2,700	-
		Mar. 5/64	-	-	40.0	-	-
		Sept. 30/64	4.8	8.0	12.0	10,700	0-5

CHAPTER 6

TOWN OF NEW TORONTO

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3- CONCLUSIONS	72

TOWN OF NEW TORONTO

1- INTRODUCTION

The Town of New Toronto, a highly industrialized town with a 1964 assessed population of 11,668, is situated on the north shore of Lake Ontario between the Village of Long Branch and the Town of Mimico.

The Town maintains a separate system of sewers. The storm sewers discharge to Lake Ontario either directly or via North Creek. The latter, also known as "Hospital Creek", rises in the Township of Etobicoke. North Creek enters Long Branch west of Price Avenue and meanders diagonally across the north-east section of Long Branch penetrating New Toronto at a point between Birmingham Street and Lake Shore Blvd. It is joined by a tributary near the intersection of Lake Shore Blvd. and 19th Street prior to traversing the Ontario Hospital grounds enroute to Lake Ontario. Both branches are enclosed in culverts throughout New Toronto upstream from the property of the Ontario Hospital.

Part of the sanitary sewage from New Toronto is treated at the Lakeview water pollution control plant. Sanitary sewage from the area east of 13th Street including the processing wastes from the Campbell Soup Company Limited plant is taken to the Humber WPCP via the sewage pumping station on Superior Avenue in Mimico.

Refuse collected in the town is disposed of jointly with the refuse from Mimico at an incinerator located in the latter municipality.

2- WASTE WATER OUTLETS

The analytical results of the samples collected from sewer outfalls in New Toronto are tabulated in Table 7. Figure 5 shows the approximate location of the sewer outfalls and sampling points.

(1) L0-72.2 (D) North Creek ("Hospital Creek")

The sample results from this creek remain unsatisfactory despite the elimination of wastes from three industries and an overflow from a sewage pumping station which previously entered this creek intermittently from sources located upstream from New Toronto.

(2) L0-72.7 (W) Storm Sewer - 9th Street
(Est. DWF 40-50 gpm)

The flow from this sewer was reported to mainly consist of cooling water from the milling rolls at the Good-year Tire and Rubber Company of Canada Limited plant located at the intersection of 9th Street and Lake Shore Blvd. in New Toronto.

While the BOD of the waste discharge has remained within the permissible limits, the suspended solids concentrations have exceeded the Commission's maximum objective. The industry primarily responsible for the suspended solids is attempting to improve its waste disposal facilities.

(3) L0-73.1 (W-1 & W-2) Storm Sewers - 2nd St.

The results of chemical analyses revealed excessive concentrations of suspended solids, phenols and ether solubles in the discharges from the storm sewers terminating at the foot of Second Street. This is indicative of inadequately treated industrial wastes gaining access to the storm sewers.

Oil which had escaped from the dyked storage area in the Canadian National Railway Company's Mimico Yard in April 1964 fouled the shore from points opposite Royal York Road to the mouth of North Creek.

(4) L0-73.3 (W) Storm Sewer Sand Beach Rd.
(Est. DWF 10 gpm)

The storm sewer which terminates at the foot of Sand Beach Road serves both sides of Dwight Avenue and therefore the two municipalities of New Toronto and Mimico. Attention is drawn to the high BOD of 235 ppm and suspended

solids concentration of 58 ppm. The average phenol count is also excessive. These results show the presence of contaminated wastes which may be of industrial origin. Despite the unsatisfactory results on this particular occasion, a marked improvement in the quality of the discharge has occurred with the diversion of the wastes of one industry into a sanitary sewer.

Five storm sewers had little or no dry weather flows at the time of sampling and one outfall was obstructed with rubble.

3- CONCLUSIONS

As previously mentioned, New Toronto is a highly industrialized centre. While the local industries provide pre-treatment facilities where required, industrial type wastes in excess of the permissible limits do reach Lake Ontario, particularly from the storm sewers designated as LO-73.1 (W-1 & W-2) - 2nd Street.

The industry primarily responsible for the high suspended solids in the flow from the 9th Street sewer is attempting to reduce the suspended solids in the waste discharge. The results of a sample collected on September 30, 1964 from the storm sewer serving Dwight Avenue but discharging opposite Sandy Beach Road indicates unsatisfactory conditions which are not accounted for at this time.

Although the quality of the water of North Creek (Hospital Creek) shows evidence of improvement, it still can not be considered satisfactory.

Table 7-1

OUTLET SURVEY RESULTS - NEW TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (cpm)</u>
LO 72.2 D	North Creek at Ontario Hospital Grounds.	Sept. 15/60	32.0	20.0	0.0	67,000,000	-
		Oct. 20/60	104.0	34.0	-	490	-
		July 20/61	56.0	8.0*	15.0	-	-
		Aug. 30/61	5.6	7.0*	-	104,000	-
		Nov. 29/61	30.0	3.6*	0.0	8,000	-
		Aug. 27/62	51.0	145.0	3.0	300,000	-
		Mar. 5/64	-	-	10.0	-	-
		July 7/64	-	-	-	57,000	-
		Sept. 15/64	2.8	17.0*	3.0	9,000	-
LO 72.6 W	Storm sewer - 12th St.	Sept. 15/60	90.0	24.0	4.0	19,000	-
		Oct. 20/60	5.6	6.0	5.0	400	-
		Nov. 29/61	NOT SAMPLED - OUTFALL OBSTRUCTED				-
		Aug. 27/62	3.4	6.0	6.0	480,000	-
		Sept. 16/64	NOT SAMPLED - OUTFALL OBSTRUCTED				-
LO 72.7 W	36 in. ϕ storm sewer - 9th St.	Sept. 15/60	5.6	18.0	6.0	100**	-
		Oct. 20/60	4.4	24.0	0.0	890	-
		Nov. 29/61	6.0	5.5*	6.0	28	-
		Aug. 27/62	14.0	32.0	3.0	8,000	-
		Sept. 16/64	1.6	47.0	2.0	4,000	40-50

Table 7-2

OUTLET SURVEY RESULTS - NEW TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>
LO 72.9 W	24 in. ϕ storm sewer - 7th St.	Sept. 15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Sept. 16/64	NO FLOW NOTED			
LO 72.9 W-1	Storm sewer - 5th St.	Sept. 15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Aug. 27/62	13.0	22	10.0	170,000
		Sept. 16/64	INSUFFICIENT FLOW FOR SAMPLING			
LO 72.9 W-2	Storm sewer - 5th St.	Sept. 15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Sept. 16/64	NO FLOW NOTED			
LO 73.0 W-	Storm sewer - 4th St.	Sept. 15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Sept. 16/64	NO FLOW NOTED			

Table 7-3

OUTLET SURVEY RESULTS - NEW TORONTO

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 73.1 R	36 in. ϕ relief sewer - sewage pumping station @ Prince of Wales Park.	Sept.15/60	NO FLOW	NOTED			
		Oct. 20/60	NO FLOW	NOTED			
		Nov. 29/61	NO FLOW	NOTED			
		Sept.16/64	NO FLOW	NOTED			
LO 73.1 W-1	4 ft. - 6 in. ϕ storm sewer - 2nd St.	Sept.15/60	70.0	82.0	30.0	1,000**	-
		Oct. 20/60	62.0	32.0	100.0	280	-
		Nov. 29/61	10.0	12.5*	6.0	0	-
		Aug. 27/62	2.1	9.0	35.0	16,000	-
		Mar. 5/64	-	-	45.0	-	-
		Sept.16/64	8.0	56.0	15.0	128,000	30-40
				<u>Ether Solubles</u>	<u>pH at Lab.</u>	<u>Chrome as Cr</u>	<u>Copper as Cu</u>
		Sept.15/60		21.0	7.0	0.0	0.0
		Oct. 20/60		2.5	7.1	0.0	0.0
		Nov. 29/61		-	7.4	0.76	0.76
		Aug. 27/62		trace	-	-	-
		Mar. 5/64		-	-	-	-
		Sept.16/64		734.0	-	-	-

Table 7-4

OUTLET SURVEY RESULTS - NEW TORONTO

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml		Est. DWF (gpm)
						**	IN	
LO 73.1 W-2	3 ft. - 0 in. ϕ storm sewer - 2nd St.	Sept. 15/60	11.0	10.0	4.0	0**		-
		Oct. 20/60	10.0	-	15.0	0**		-
		Nov. 29/61	14.0	34.0*	0.0	0		-
		Aug. 27/62	2.2	78.0	15.0	0		-
		Mar. 5/64	-	-	10.0	-		-
		Sept. 16/64	24.0	12.0	25.0	0		30-40
				<u>Ether Solubles</u>	<u>pH at Lab.</u>	<u>Chrome as Cr</u>	<u>Copper as Cu</u>	
		Sept. 15/60		11.0	2.5	3.0		24.0
		Oct. 20/60		trace	2.9	4.4		7.7
		Nov. 29/61		-	3.0	5.0		24.0
		Aug. 27/62		7.0	-	-		-
		Mar. 5/64		-	-	-		-
		Sept. 16/64		50.0	-	-		-

Table 7-5

OUTLET SURVEY RESULTS - NEW TORONTO

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform		Est. DWF (gpm)
						Count/100 ml	** IN	
LO 73.3 W	36 in. ϕ storm	Sept. 15/60	1020.0	80.0	280.0	10*	-	-
	sewer - Sand	Oct. 20/60	142.0	32.0	80.0	14,000	-	-
	Beach Road -	Nov. 29/61	14.0	32.0	4.0	0	-	-
	(This sewer serves	Aug. 27/62	3.4	4.0	8.0	44,000	-	-
	both New Toronto	Sept. 30/64	235.0	58.0	20.0	100	10	10
	and Mimico).							
				pH at Lab.	Chrome as Cr			
		Sept. 15/60		8.3	0.02			
		Oct. 20/60		6.1	-			
		Nov. 29/61		-	-			
		Aug. 27/62		-	0			
		Sept. 30/64		-	-			

CHAPTER 7

VILLAGE OF LONG BRANCH

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VILLAGE OF LONG BRANCH

1- INTRODUCTION

The Village of Long Branch is situated at the extreme south-westerly section of the Municipality of Metropolitan Toronto. It lies to the east of Etobicoke Creek and is bordered on the south by approximately 1.5 miles of the Lake Ontario shoreline. The 1964 assessed residential population of Long Branch was 11,658.

A public park known as the Marie Curtis Park is situated on both sides of the lower end of Etobicoke Creek. The lake is used for swimming purposes offshore from the park area.

The Village of Long Branch has a separate system of sewers. The storm sewers are tributary to Lake Ontario with the exception of those serving the Exmoor Drive and 43rd Street areas which are connected to Etobicoke Creek. Part of the sanitary sewage from Long Branch enters the Lakeshore trunk sewer and is treated at the Lakeview water pollution control plant (WPCP) located in the Township of Toronto. The remainder is taken to the Long Branch WPCP which is situated east of the mouth of Etobicoke Creek.

The refuse collected in Long Branch is disposed of at a sanitary landfill site located near the Police Village of Maple.

2- WASTE WATER OUTLETS

The results of the samples collected in connection with Long Branch are presented in Table 8. This table also contains the analytical results from previous sampling runs for comparison purposes. The sampling points are shown on figure 5.

- (1) LO-71.1 (W) Storm Sewer - 37th St.
(Est. DWF 10-15 gpm)

The BOD of the discharge from this storm sewer at times slightly exceeded the Commission's objective. The coliform counts have also been excessive on occasions. This sewer receives the discharge from a drainage ditch

located immediately upstream from Lake Shore Blvd. and east of the Castrol Oils (Canada) Limited plant. The ditch rises north of the CN tracks in the Township of Etobicoke.

It has not yet been determined whether the sources responsible for the adverse analyses results, originate upstream in the Township of Etobicoke or in Long Branch.

An investigation made of this drainage channel by the Metropolitan Toronto Works Department together with the Township of Etobicoke revealed only non-contaminated cooling water entering this watercourse, from the Township of Etobicoke.

(2) LO-71.7 (WR) Storm & Relief Sewer -
25th Street (Est. DWF 0.5 ppm)

The discharge from this sewer possessed an offensive odour and a cloudy appearance.

(3) LO-71.9 (WR) Storm & Relief Sewer -
23rd Street (Est. DWF 0.5 gpm)

The discharge from this sewer possessed an offensive odour and a cloudy appearance. While the discharge from this sewer has improved in chemical quality, the appearance, offensive odour and consistently high coliform counts of the discharge suggest that sanitary wastes may still have access to this sewer.

The storm sewers designated as LO-70.9 (W), LO-71.3 (W) and LO-71.5 (W) had little or no dry weather flow during the time of the examination on September 16, 1964.

3- CONCLUSIONS

Sources of pollution originating in the Village of Long Branch appear to be minimal. The storm sewer outfall designated as LO-71.1 (W) 37th Street, was the only sewer with any significant dry weather flow. This sewer provides drainage for a section of the Township of Etobicoke. Two of the storm sewers designated as LO-71.7 (WR) 25th Street and LO-71.9 (WR) 23rd Street which had dry weather flows of less than 1.0 gpm also act as relief sewers for the sanitary sewer on Lake Promenade.

Table B-1

OUTLET SURVEY RESULTS - LONG BRANCH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN .</u>
LO 70.7 D	Etobicoke Creek @ Lake Shore Blvd.	Sept. 15/60	7.2	46.0	2.0	5,600
		Oct. 20/60	4.4	3.0*	-	14,000
		Feb. 15/61	17.0	11.0*	-	680
		Sept. 14/61	3.2	2.0*	15.0	<10
		Nov. 29/61	4.8	3.8*	4.0	1,040,000
		Aug. 23/62	6.1	1.5*	6.0	800
		Mar. 5/64	-	-	7.0	-
		July 9/64	1.8	31.0*	-	107,000
		Aug. 31/64	1.9	26.0	-	22,000
		Sept. 16/64	5.4	10.0	4.0	390,000
		Oct. 28/64	3.4	10.0*	-	40,000
		Nov. 23/64	56.0	45.0*	-	3,800
		Jan.19 /65	6.0	17.0	-	18,000

Table 8-2

OUTLET SURVEY RESULTS - LONG BRANCH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>M.F. Coliform Count/100 ml ** IN</u>
LO 70.75 T	Outfall sewer- Long Branch Water Pollution Control Plant.	Sept. 15/60	NOT SAMPLED			
		Oct. 20/60	195.0	278.0	-	8,000,000
		Nov. 29/61	325.0	310.0*	10.0	610,000
		Aug. 27/62	74.0	144.0	6.0	500
		Sept. 16/64	24.0	71.0	20.0	10
LO 70.9 W	42 in. ϕ storm sewer - 40th St.	Sept. 15/60	NO FLOW NOTED			
		Oct. 20/60	NO FLOW NOTED			
		Nov. 29/61	NO FLOW NOTED			
		Aug. 27/62	5.2	8.0	10.0	32,000
		Sept. 16/64	NO FLOW NOTED			
LO 71.1 W	1 ft.-6 in. x 5 ft.-0 in. - Storm sewer - 37th St.	Sept. 15/60	18.0	20.0	4.0	17,000
		Oct. 20/60	2.6	6.0	10.0	14,000
		Nov. 29/61	27.0	8.0*	6.0	221
		Aug. 27/62	3.2	6.0	7.0	4,800
		Sept. 16/64	18.0	11.0	6.0	70,000

Table 8-3

OUTLET SURVEY RESULTS - LONG BRANCH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 71.18 W	30 in. ϕ storm sewer - Long Branch Ave.	Sept. 16/64	NOT EXAMINED				
LO 71.3 W	42 in. ϕ storm sewer - Lake Promenade West of 31st St.	Sept. 15/60	NO FLOW NOTED				
		Oct. 20/60	45.0	70.0	0	53,000	-
		Nov. 29/61	NO FLOW NOTED				
		Aug. 27/62	4.0	8.0	12.0	18,000	-
		Sept. 16/64	FLOW INSUFFICIENT FOR SAMPLING				
LO 71.5 W	48 in. ϕ storm sewer - 28th St.	Sept. 15/60	FLOW INSUFFICIENT FOR SAMPLING				
		Oct. 20/60	NO FLOW NOTED				
		Nov. 29/61	FLOW INSUFFICIENT FOR SAMPLING - TRACE OF SEWAGE				
		Aug. 27/62	6.8	6.0	15.0	5,400,000	-
		Sept. 16/64	NO FLOW NOTED				
LO 71.7 WR	Storm sewer - 25th St.	Sept. 15/60	NO FLOW NOTED				
		Oct. 20/60	NO FLOW NOTED				
		Nov. 29/61	FLOW INSUFFICIENT FOR SAMPLING				
		Sept. 16/64	8.8	4.0	5.0	800,000	0-5

Table 8-4

OUTLET SURVEY RESULTS - LONG BRANCH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 71.9 WR	Storm sewer - 23rd St.	Sept. 15/60	440.0	96.0	60.0	190,000	-
		Oct. 20/60	14.0	12.0	90.0	100,000**	-
		Nov. 29/61	1140.0	240.0*	600.0	12,000	-
		July 3/62	10.0	320.0	-	-	-
		Aug. 27/62	3.6	10.0	8.0	230,000	-
		Sept. 16/64	8.8	7.0	2.0	510,000	0-5

CHAPTER 8

TOWNSHIP OF ETOBICOKE

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TOWNSHIP OF ETOBICOKE

1- INTRODUCTION

The Township of Etobicoke is bounded on the south-east by approximately 1.1 miles of the Lake Ontario shoreline. The municipality has a separate system of sewers. The bulk of the storm sewers are connected to either the Humber River, Etobicoke Creek or Mimico Creek. A minor water-course, that traverses the Village of Long Branch, and North Creek, which travels through both Long Branch and New Toronto enroute to Lake Ontario, also provide drainage for sections of the southern portion of the township. Three storm sewers drain directly to Lake Ontario.

Sanitary sewage from the township is treated at the Humber and the Lakeview water pollution control plants.

2- WASTE WATER OUTLETS

The sample results pertaining to the discharges from the storm sewers serving the Township of Etobicoke are contained in Table 9. The sampling points are shown on figure 5.

- (1) LO-74.9 (W) Storm Sewer - South Side
of Lake Shore Blvd. W. - 300 ft. west
of Mimico Creek.

The estimated dry weather flow from the storm sewer was less than 1.0 gpm. The coliform count of 16,100,000 in the waste discharge is indicative of sanitary sewage.

- (2) LO-75.1 (W) Storm Sewer - Park Lawn Rd.
(Est. DWF 3.5 gpm)

The coliform indeces of samples of the discharge from this sewer indicate the presence of sanitary sewage. The outlet was partly obstructed with broken pieces of concrete and the ditch joining the sewer outlet with the lake contained refuse such as wooden debris, broken bricks, paint cans (etc.).

This accumulation may have adversely influenced the test results.

(3) LO-75.6 (W) Storm Sewer - 1500 ft.
West of Humber River

There is little or no dry weather flow from this sewer and the discharge appears to be relatively free of pollution.

3- CONCLUSIONS

The storm sewers in the Township of Etobicoke do not appear to be contributing any significant dry weather flows directly into Lake Ontario. However, some bacteria pollution was revealed in the discharges from the storm sewers designated as LO-74.9 (W) - Lake Shore Blvd. W. - 300 ft. west of Mimico Creek, and LO-75.1 (W) - Lake Shore Blvd. W. - at Park Lawn Road.

The BOD and coliform counts of the samples from Mimico Creek indicate upstream sources of pollution.

Table 9-1

OUTLET SURVEY RESULTS - TOWNSHIP OF ETOBICOKE

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 74.9 W	15 in. ϕ storm sewer - Lake Shore Blvd. W., South side - 300 feet West of Mimico Cr.	Nov. 22/61	NOT SAMPLED - OUTFALL OBSTRUCTED, EVIDENCE OF SEPTIC DISCHARGE				
		Sept. 30/64	14.0	12.0	60.0	16,100,000	0-5
LO 75.0 D	Mimico Creek @ Lake Shore Blvd. W.	Sept. 15/60	17.0	14.0	12.0	0**	-
		Oct. 20/60	23.0	32.0	220.0	460	-
		Nov. 22/60	17.0	8.0*	-	460	-
		Oct. 24/61	12.0	7.8*	-	10,400	-
		Nov. 22/61	6.4	40.0*	275.0	<2	-
		Aug. 27/62	5.4	12.5*	50.0	11,000	-
		Mar. 5/64	-	-	7.0	-	-
		July 9/64	3.0	16.0*	-	18,000	-
		Aug. 31/64	2.0	11.0	-	41,000	-
		Sept. 30/64	6.8	11.0	12.0	7,000	-
		Oct. 28/64	4.4	9.5*	-	12,000	-
		Nov. 23/64	6.6	12.5*	60.0	380	-
		Jan. 19/65	10.0	22.0	140.0	410	-

Table 9-2

OUTLET SURVEY RESULTS - TOWNSHIP OF ETOBICOKE

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpd)</u>
LO 75.1 W	24 in. ϕ storm	Sept. 15/60	74.0	60	2.0	100,000**	-
	sewer - Lake	Oct. 20/60	580.0	154	-	1,000,000**	-
	Shore Blvd. W.,	Nov. 22/61	16.0	8*	10.0	71,000	-
	South Side @	Aug. 29/62	12.0	16	6.0	11,000,000	-
	Park Lawn Road.	Feb. 11/65	13.0	25	-	62,000	3-5
LO 75.6 W	27 in. ϕ storm	Nov. 22/61	FLOW INSUFFICIENT FOR SAMPLING				
	sewer - Lake	Aug. 29/62	9.2	14	3.0	18,000	-
	Shore Blvd. W.	Feb. 11/65	12.0	6	-	690	1.0
	1500 feet West of Humber River (access via Sandy Beach Motel entrance).						

CHAPTER 9

TOWNSHIP OF SCARBOROUGH

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3- CONCLUSIONS	93

TOWNSHIP OF SCARBOROUGH

1- INTRODUCTION

The Township of Scarborough is bounded on the south by approximately 11 miles of the Lake Ontario shoreline. The municipality possesses a separate system of sewers. The storm sewers are tributary to the Don River, Highland Creek, Rouge River and there are a number connected directly to Lake Ontario.

Sanitary sewage from the township is treated at the Main and Highland Creek water pollution control plants.

Refuse from the township is disposed of by the sanitary landfill method.

2- WASTE WATER OUTLETS

As previously mentioned, a number of the township storm sewers are connected to Lake Ontario. The sample results of the dry weather flows from these storm sewers and watercourses are included in Table 10. Figure 6 shows the approximate locations of the sampling points.

Attention is drawn to the following sewer outlets and watercourses which contained dry weather flows of a polluting nature.

- (1) LO-89.3 (W) Storm Sewer - Fallingbrook Dr.
(Est. DWF 10-12 gpm)

The sample results for the past two years show a marked increase in BOD, suspended solids and bacteria concentrations. The present concentrations exceed permissible limits.

- (2) LO-90.4 (R) - Relief Sewer Birchmount Rd.
(Est. DWF 4 gpm)

The results of the samples collected from this sewer were also in excess of acceptable tolerances. Remedial measures to correct this condition are underway.

- (3) LO-91.7 (W) - Scarborough Crescent
(Est. DWF 0.5-1.0 gpm)

The quality of the discharge from this sewer deteriorated in 1964.

- (4) LO-92.0 (D) Watercourse west of Brimley Rd.

This watercourse travels through the Brimley Road sanitary landfill site enroute to Lake Ontario. The adverse analyses results indicate that the water is being polluted as it traverses the disposal area.

- (5) LO-93.9 (D) Watercourse east of
Pineridge Drive

This sampling point represents a minor watercourse which reaches Lake Ontario via a number of private properties and a ravine.

The high BOD suggests the contamination by organic material. Sewage from a number of the houses in the area is reportedly disposed of by means of private septic tank systems.

- (6) LO-99.1 (I) Industrial Sewer
Johns-Manville Co. Ltd.

The suspended solids values of the wastes discharged from this plant have consistently exceeded the Commission's objective of not greater than 15 ppm.

The present system of disposal is now being evaluated by the industry, the Industrial Waste Control Branch of the Metropolitan Toronto Works Department and the Commission's Division of Industrial Wastes. Following completion of this study, recommendations will be made concerning adequate treatment of the wastes.

3- CONCLUSIONS

The Township of Scarborough Works Department has an inspection and maintenance programme of the weirs on the sanitary sewers. This enables corrective action to be taken as required.

However, a relatively light volume of polluted wastes is still reaching Lake Ontario from some of the storm sewer outlets. Samples collected from three minor watercourses and from Highland Creek indicated contamination of these waters beyond acceptable limits.

Table 10-1

OUTLET SURVEY RESULTS - TOWNSHIP OF SCARBOROUGH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 89.1 W	Storm sewer - Fallingbrook Rd.	Dec. 21/61	132.0	564.0	0	660,000	-
		Aug. 28/62	3.6	6.0	4	980,000	-
		Sept. 3/63	1.5	10.0	-	2,330,000	-
		Oct. 22/64	2.8	7.0	6	49,000	1.0
LO 89.3 W	48 in. Ø storm sewer - south end of Falling- brook Drive.	Nov. 22/61	1.6	7.5*	8	590	-
		Dec. 21/61	2.4	4.0*	0	180	-
		Aug. 28/62	1.2	10.0	3	1,050	-
		Sept. 3/63	60.0	133.0	-	16,000	-
		Oct. 22/64	32.0	24.0	6	21,000	12.0
LO 89.7 R	60 in. Ø Relief sewer - Warden Ave.	Dec. 21/61	8.6	296.0	10	350	-
		Sept. 3/63	3.4	7.0	-	29,000	-
		Oct. 22/64	10.0	11.0	10	56,000	1.5
LO 90.4 R	48 in. Ø Relief sewer - Birch- mount Road.	Dec. 21/61	1.9	4.0*	0	6,300	-
		Sept. 3/63	42.0	23.0	-	17,000,000	-
		Oct. 22/64	140.0	130.0	20	5,500,000	4.0

Table 10-2

OUTLET SURVEY RESULTS - TOWNSHIP OF SCARBOROUGH

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN	Est. DWF (gpm)
LO 90.9 W	60 in. ϕ storm sewer - Lake- hurst Cres.	Dec. 21/61	24.0	20.0*	0	73,000	-
		Aug. 28/62	36.0	88.0	0	42,000,000	-
		Sept. 3/63	12.0	42.0	-	890,000	-
		Oct. 22/64	5.0	18.0	15	74,000	1.0
LO 91.3 W	Storm sewer - Glen Everest Rd.	Dec. 21/61	2.1	17.0*	trace	80	-
		Aug. 28/62	2.0	8.0	6	47,000	-
		Sept. 3/63	2.1	4.0	-	0	-
		Oct. 22/64	5.4	24.0	6	25,000	-
LO 91.6 W	48 in. ϕ storm sewer Midland Ave.	Dec. 21/61	13.0	360.0	8	34,000	-
		Aug. 28/62	2.0	18.0	7	13,900	-
		Sept. 3/63	1.9	9.0	-	3,700	-
		Oct. 22/64	4.5	20.0	15	20,000	-
LO 91.7 W	24 in. ϕ storm sewer - Scarboro Cres.	Dec. 21/61	315.0	214.0	60	1,500,000	-
		Aug. 28/62	1.1	11.0	7	9,800	-
		Sept. 3/63	1.4	8.0	-	5,800	-
		Oct. 22/64	52.0	176.0	12	490,000	0.5

Table 10-3

OUTLET SURVEY RESULTS - TOWNSHIP OF SCARBOROUGH

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN	Est. DWF (gpm)
LO 91.8 W	48 in. ϕ storm sewer - Chine Dr.	Dec. 21/61	7.0	7.5*	0	15,000	-
		Aug. 28/62	2.2	10.0	3	8,200,000	-
		Sept. 3/63	2.7	4.0	-	6,200	-
		Oct. 22/64	2.9	9.0	3	6,200	1.5
LO 92.0 D	Local watercourse west of Brimley Road.	Dec. 21/61	2.1	6.5*	2	1,400	-
		Aug. 28/62	510.0	538.0	250	5,100	-
		Sept. 3/63	400.0	72.0	-	190	-
		Oct. 22/64	840.0	94.0	200	20	12.0
LO 92.2 W	48 in. ϕ storm sewer - south of Larwood Blvd.	Dec. 21/61	5.0	11.5*	0	> 150,000	-
		Aug. 28/62	2.7	13.0	3	59,000	-
		Sept. 3/63	145.0	126.0	-	430,000	-
		Oct. 22/64	5.1	7.0	20	3,800	5.0
LO 93.9 D	Local watercourse east of Pineridge Drive.	Dec. 21/61	9.0	108.0	0	350,000	-
		Aug. 28/62	68.0	376.0	13	960,000	-
		Sept. 3/63	1240.0	12,108.0	-	1,900,000	-
		Oct. 22/64	168.0	958.0	0	1,300,000	1.0

Table 10-4

OUTLET SURVEY RESULTS - TOWNSHIP OF SCARBOROUGH

<u>Sampling Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Suspended Solids (ppm) (*Turbidity)</u>	<u>Phenols (ppb)</u>	<u>MF Coliform Count/100 ml ** IN</u>	<u>Est. DWF (gpm)</u>
LO 95.2 W	72 in. ϕ storm sewer - foot of Livingston Rd.	Dec. 21/61	4.0	17.0*	3	940	-
		Aug. 28/62	6.4	196.0	0	270,000	-
		Sept. 3/63	11.0	133.0	-	87,000	-
		Oct. 22/64	2.3	27.0	0	3,000	30.0
LO 95.8 W-1	36 in. ϕ storm sewer - West of Galloway Road.	Sept. 14/60	2.6	28.0	0	<10	-
		Nov. 17/60	2.8	86.0	-	900	-
		Dec. 21/61	2.2	2.8*	-	78	-
		Aug. 29/61	1.2	3.0	4	8,000	-
		Oct. 22/64	2.2	25.0	2	900	0.5
LO 95.8 W-2	21 in. ϕ storm sewer West of Galloway Road.	Sept. 14/60	NO FLOW NOTED				
		Nov. 17/60	NO FLOW NOTED				
		Dec. 21/61	NO FLOW NOTED				
		Oct. 22/64	NO FLOW NOTED				
LO 95.8 W-3	8 in. ϕ storm sewer West of Galloway Road.	Sept. 14/60	2.8	80.0	3	0	-
		Nov. 17/60	6.0	24.0	-	10**	-
		Dec. 21/61	2.9	8.5*	0	2	-
		Aug. 29/62	1.8	8.0	0	370	-
		Sept. 4/63	2.4	22.0	-	38	-
		Oct. 22/64	7.9	75.0	0	3,300	0.5

Table 10-5

OUTLET SURVEY RESULTS - TOWNSHIP OF SCARBOROUGH

Sampling Point No.	Location	Date	5-Day BOD (ppm)	Suspended Solids (ppm) (*Turbidity)	Phenols (ppb)	MF Coliform Count/100 ml ** IN	Est. DWF (gpm)
LO 96.6 W	60 in. ø storm sewer foot of Morningside Ave.	Dec. 21/61	3.8	4.0*	4	8,700	-
		Aug. 29/62	2.8	78.0	4	82,000	-
		Sept. 3/63	11.0	27.0	-	17,900	-
		Oct. 22/64	1.9	20.0	4	4,100	240
LO 98.6 D	Highland Creek @ Lake Ontario.	Sept. 14/60	13.0	28.0	8	<10	-
		Nov. 17/60	11.0	66.0	28	980,000	-
		May 10/61	15.0	16.0*	17	12	-
		July 26/61	9.0	15.0*	0	2,160,000	-
		Aug. 29/62	40.0	62.0*	25	23,000,000	-
		Sept. 4/63	0.6	68.0	-	60	-
		June 22/64	1.4	2.5*	-	300	-
		Aug. 10/64	1.2	17.0	-	810	-
		Sept. 25/64	2.0	12.5*	-	4,500	-
		Oct. 22/64	16.0	28.0	12	0	-
		Dec. 3/64	4.5	20.0*	-	73,000	-
		Jan. 21/65	21.0	18.0*	-	20	-
LO 99.1 I	3'-0" x 3'-0" Industrial sewer - Johns- Manville Co. Ltd.	Sept. 14/60	34.0	172.0	6	4,800	-
		Nov. 17/60	21.0	164.0	4	100	-
		Sept. 12/62	8.0	736.0	20	3,000	-
		Sept. 4/63	3.2	142.0	-	6,000	-
		Oct. 22/64	19.0	85.0	0	20,000	-

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1- ABBREVIATIONS

BOD	- Biochemical Oxygen Demand
cfs	- Cubic Feet per Second
Est.DWF	- Estimated Dry Weather Flow
CNE	- Canadian National Exhibition
gpm	- Gallons per Minute
mgd	- Million Gallons per Day
MF	- Membrane Filter
ml	- Millilitre
ppb	- Parts Per Billion
ppm	- Parts Per Million
OWRC	- Ontario Water Resources Commission
WPCP	- Water Pollution Control Plant
IN	- Indicated Number

2- SYMBOLS



- Outlet



- Outlet Sampling Point

Type of Outlet

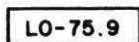
D- Drainage Ditch or Stream Outlet

I- Industrial Sewer Outlet

R- Relief Sewer Outlet

T- Treated Sewage Outlet

W- Storm Sewer Outlet



- Lake, Harbour or Stream Sampling Point

3- EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

A- Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourses, lake, and outfalls. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in sewage and are generally minimal in other stream pollutants. The results of the examinations are reported as MF coliform count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

B- Chemical Analyses

The chemical analyses performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids, turbidity, and in some instances phenols, and ether solubles.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in ppm and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters, or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are:

(i) for stream water - a 5-day BOD of not greater than 4 ppm.

(ii) for storm sewer, sewage treatment plant and industrial waste discharges - a 5-day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

Where suspended solids values approach 20 ppm or less, laboratory difficulties are experienced and, excepting the samples from sewage treatment works and in some cases from outfalls, the values of suspended matter are usually determined as turbidity.

The OWRC's objective for discharges is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Silica Units".

(4) Phenols

Phenols and phenolic equivalents were measured by the Gibbs Method with modifications. Phenols react with chlorine to produce intensely aromatic compounds. These compounds, even when highly diluted, may give a taste and odour to the water variously described as medicinal, chemical or iodoform. Phenols taint fish or are toxic to fish depending on the concentration. Normally water contains no phenolic compounds.

The objectives for stream water quality are an average phenol content of not greater than 2 ppb and a maximum of 5 ppb. The limits for outfall discharges is a concentration of not greater than 20 ppb.

(5) Oils and Ether Soluble Materials

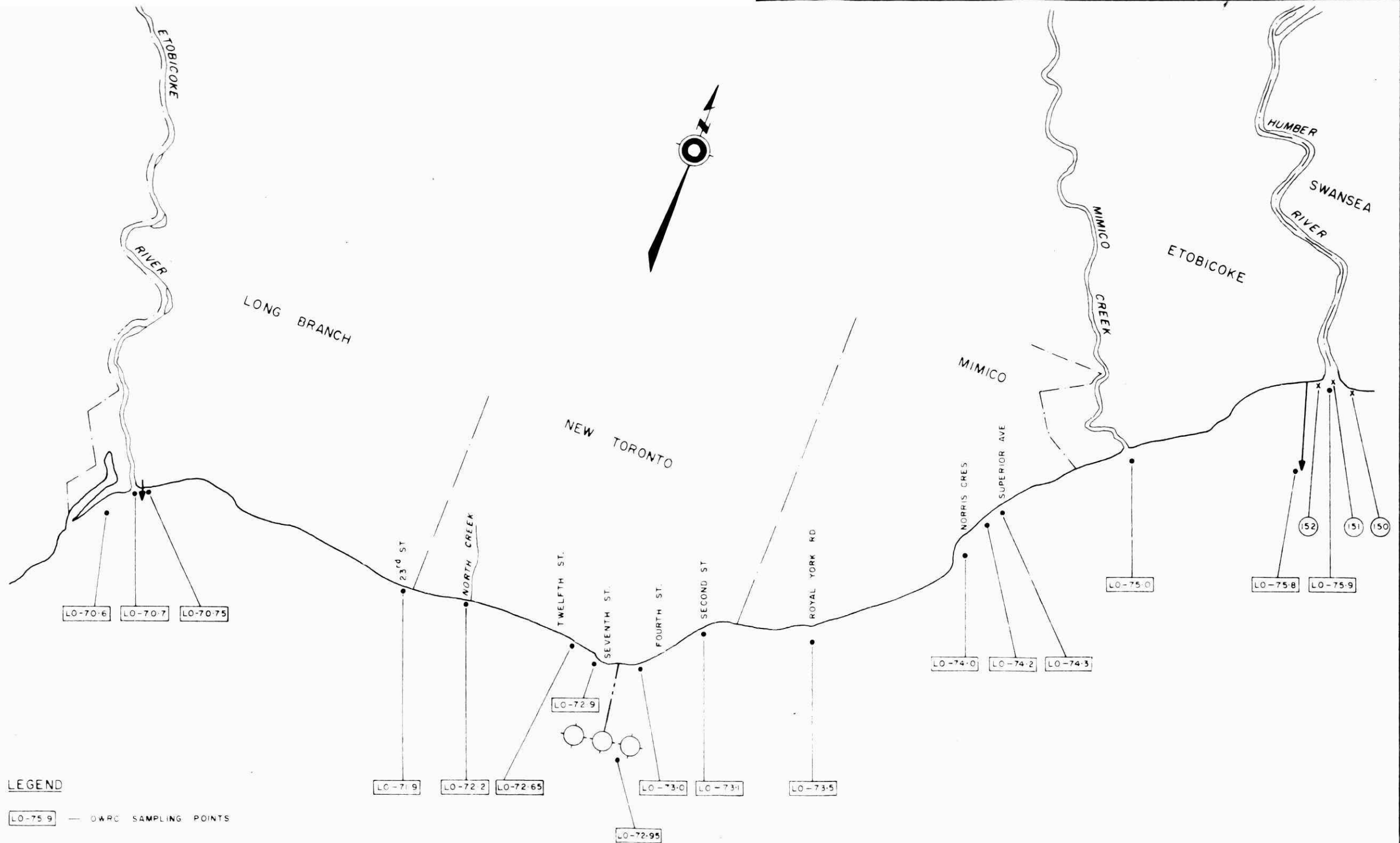
These include oils and all other ether soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat, either for industrial or domestic use. Oils make the stream unsightly and the water unfit for bathing. They coat water craft and are a hazard to wild fowl.

The upper limits for outfall discharges is a maximum of not greater than 15 ppm.

(6) Free Ammonia

Free ammonia represents the first product of the decomposition of organic matter and thus appreciable concentrations of free ammonia usually indicate "fresh pollution" of sanitary significance. The exception is when ammonium sulfate of mineral origin is involved.

The following values may be of general significance in appraising free ammonia content: Low - 0.015 to 0.03 ppm; moderate - 0.03 to 0.10 ppm; high - 0.10 or greater. Special care must be exercised to allow for ammonia added if the "chlorine-ammonia" treatment of water is used or if crenothrix organisms are present.

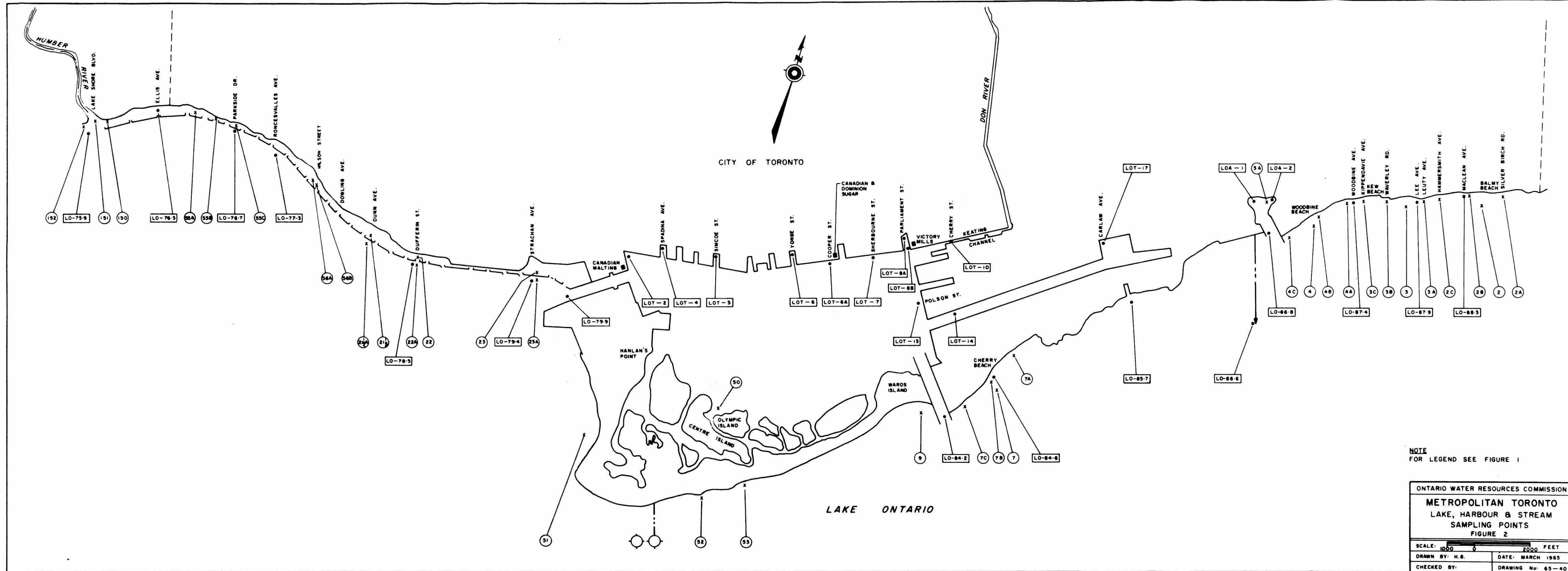


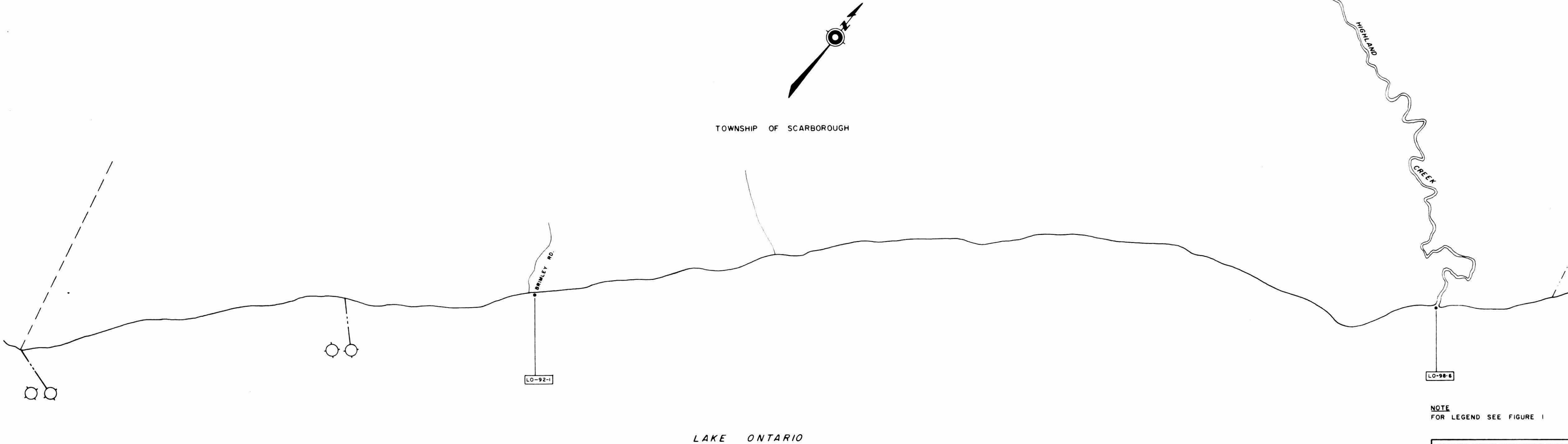
LAKE ONTARIO

ONTARIO WATER RESOURCES COMMISSION

METROPOLITAN TORONTO
LAKE & STREAM
SAMPLING POINTS
FIGURE 1

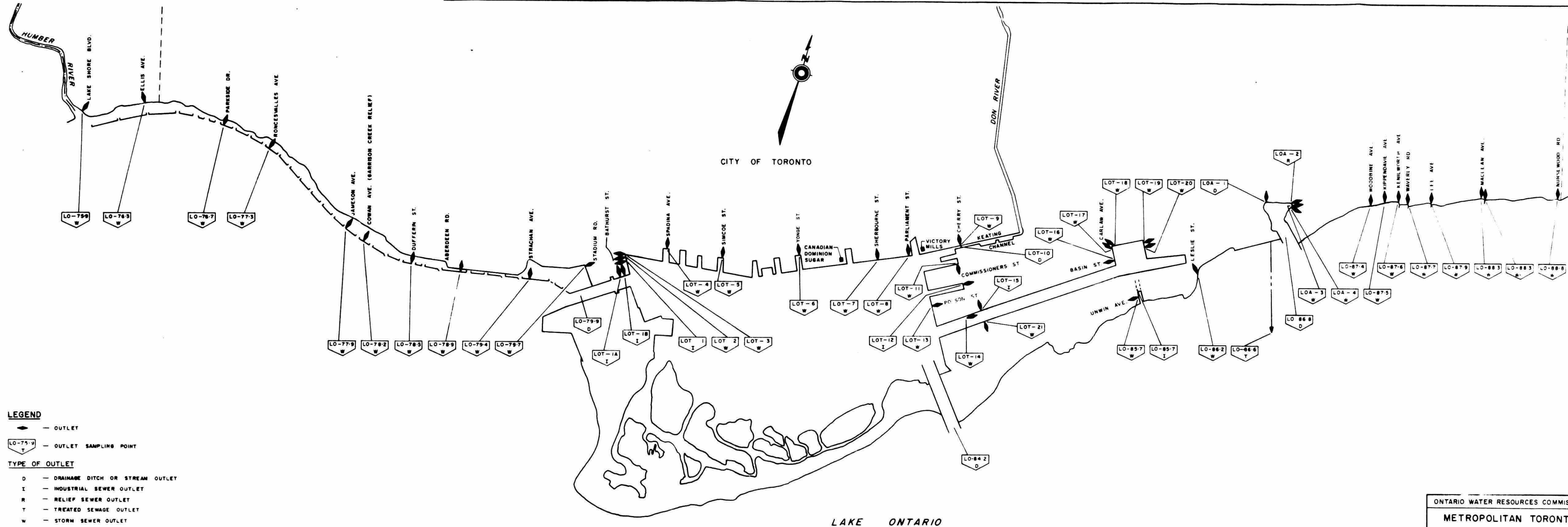
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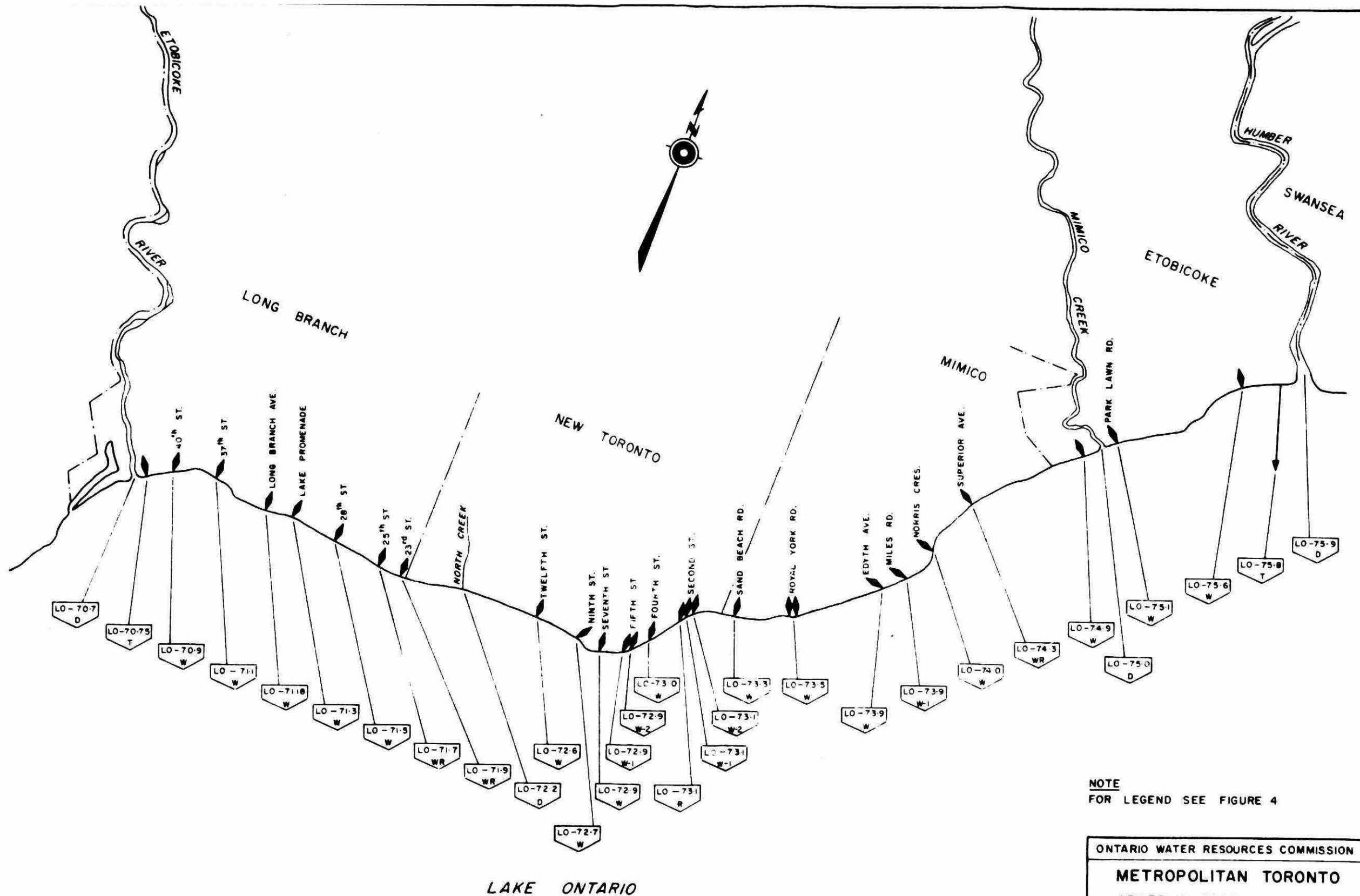




NOTE
FOR LEGEND SEE FIGURE 1

ONTARIO WATER RESOURCES COMMISSION	
METROPOLITAN TORONTO	
LAKE & STREAM	
SAMPLING POINTS	
FIGURE 3	
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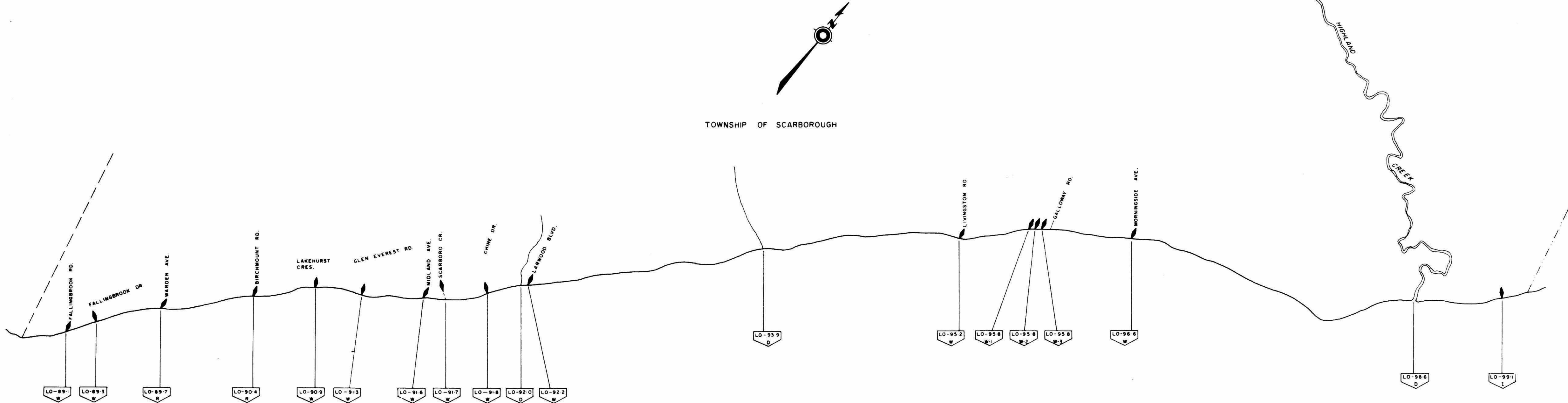


NOTE
FOR LEGEND SEE FIGURE 4

ONTARIO WATER RESOURCES COMMISSION	
METROPOLITAN TORONTO	
SEWER & STREAM OUTLETS	
FIGURE 5	
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TOWNSHIP OF SCARBOROUGH

LAKE ONTARIO



NOTE
FOR LEGEND SEE FIGURE 4

ONTARIO WATER RESOURCES COMMISSION

METROPOLITAN TORONTO
SEWER & STREAM OUTLETS

FIGURE 6

SCALE 1000 0 2000 FEET

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